What's Wrong with the Paper Industry?

OVER-PRODUCTION!

We ask the question in the above caption and give the answer immediately in the line below it. Then, we reiterate it again for the sake of emphasis:

Over-production!

Too much grade paper;

Too much sulphite bond;

Too much book paper;

Too many grocery bags;

Too much box board;

Too much kraft.

And now, it would seem we are to have a heavy over-production of newsprint.

Then, just for the sake of good measure, we have

Too much money;

Too much credit;

Too many promoters;

And too many gullible investors.

Then, there are too many paper magnates just now innoculated with the Henry Ford twin virus—mass production and low prices—and this right in face of idle Ford factories. Low unit cost of production consistent with a maintained quality or model which meets with continued consumer acceptance is good. But there comes the point where unit cost may not be forced lower.

For instance: A shoe manufacturer was producing 500,000 pairs of shoes at a cost of $4.02 per pair. He went to a production of 1,000,000 pairs at a unit cost of $3.55 and then increased it to 2,000,000 pairs at a unit cost of $3.26.

"Why not," said he, "produce five million pairs and have a unit cost below $2.75?"

But there is a very definite limit to this procedure. When he made 2,000,000 pairs of shoes, "fixed costs" and "general running costs" remained static. At 2,000,000 pairs, he utilized his plant 100 per cent. To crowd production to 5,000,000 pairs meant expensive plant extensions, increased overhead expenses, which absorbed the prospective unit reduction and then some.

Result? **Over-production,** cut quality and cut prices to keep the factory running. A case of transition from a profitable controlled production to a profitless competitive proposition.

Over-production breeds vicious, ruthless, cut-throat competition, and all are the deadly enemies of profit.

Now it is a fundamental of elementary economics that "since business men are engaged in production for the sake of profits, that they will not, if they can help it, offer their products for sale, except at prices, at least high enough to cover all their costs." Then, follows the unescapable verdict: "the producer who is unable to sell his products at prices high enough to cover his costs, **must** sooner or later give up and retire from business."

This means that competitive producers indulging in cut-throat competitive sellings due to over-production must stop.

It's such a pity—

E D I T O R I A L

There is little excuse for the situation.

Paper consumption is increasing;

Paper is the essential commodity of civilization;

We are using our wood four times faster than it grows.

Our waterpowers are all going out of profitless paper making into profitable production of commercial energy.

The paper industry needs its profits,—will perish without them.

As business men engaged in paper production for the sake of profit, stop **over-production.**

King of the Forest vs. Steel

IN THESE days of steel and concrete buildings, when to those who are not architects and engineers, the very mention of timber construction means fire hazard, the qualities of timber frame construction come to the foreground, such as to recommend attention being given to their use for certain structures. There are timber constructed buildings standing today that speak well for the enduring qualities of the "king of the forest," the tree. The slow burning qualities of heavy timbers speak also in favor of this type of construction, and fire insurance interests claim that more often the hazard is determined by the contents of the building rather than the type of construction of the building itself.

Depreciation of wood is one disadvantage as compared with steel or concrete, but the rapid erection and comparatively low cost qualities speak well in its favor. While it is true that modern methods are reducing the cost of building concrete and steel structures, it is also reported that structural timbers are increasing in cost which reduces their comparative economy.

A peculiar comparison of structural merits is shown in the recent destruction by fire of two factories located in approximately the same area. Both were single story assembly plants of similar sizes, the only outstanding difference being the roof construction. Both buildings had masonry walls, the roofs being of truss construction—one of wood and the other of steel. The building having the wood truss roof burnt to the ground leaving only the walls standing, while that having the steel truss became so hot in the conflagration that when water was applied the steel buckled, pulling down the side walls as well.

Production on the building having the wood truss construction was resumed in ten days, while that having the steel construction could not resume production for three months, owing to the necessity for rebuilding the entire structure.

Timber frame constructed buildings have their merits, and should be considered when plans are being made for the erection of certain type of industrial structures. Steel, we know, is vitally important and must be used for certain types of construction where wood cannot be substituted or used in its stead, but this, however, does not diminish the value or possibilities of using timber construction in certain cases where time and money are factors of importance, in comparison to the size of the proposed building and its intended use.

Useful Report on Paper Tariffs

AMONG recent publications issued by the American Paper and Pulp Association is a pamphlet compilation of references to paper in all of the United States tariff laws from 1789 to 1922, inclusive. The material was prepared for the association by L. M. Lamm, a Washington correspondent who enjoys exceptional facilities for compiling lists of tariff laws affecting any particular industry. This tariff history of the paper industry, entitled Special Report No. 8, is divided in two parts, one giving extracts of references to paper in the various tariff acts and the other taking up some of the chief classifications of paper in their relation to certain peculiarities in the imposition of duties.

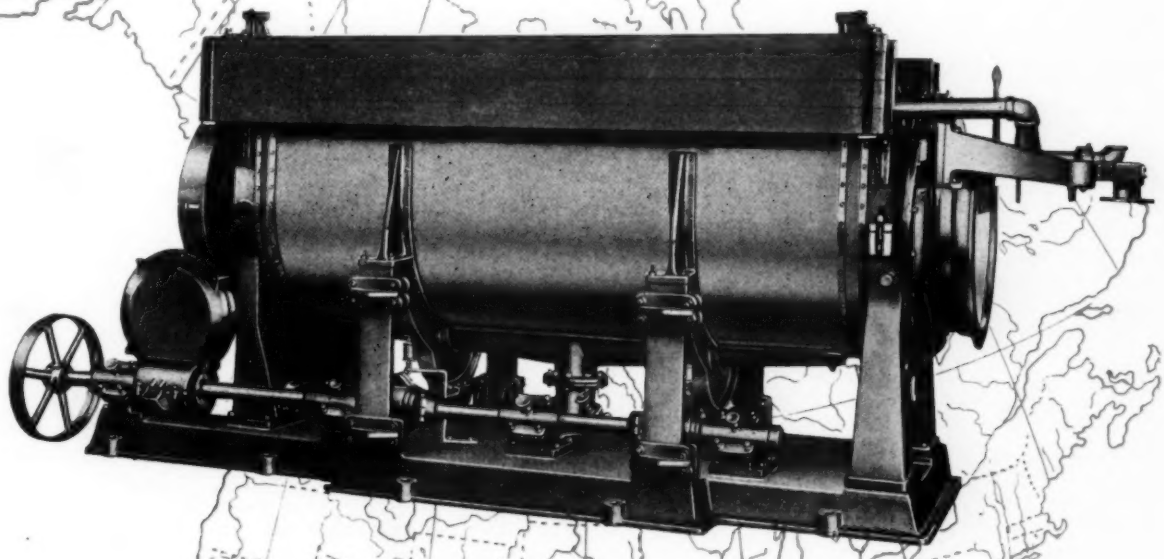
A comprehensive chart measuring 22x19 inches forms an invaluable appendix to the publication. This chart, which is the work of Norman S. Meese, chief of Paper Division, U. S. Bureau of Foreign and Domestic Commerce, shows at a glance the various rates of duty that have been imposed on paper imported from foreign countries during a period of 138 years, from July, 1789, to September 1922, inclusive. In this chart the classes of paper are named in the left-hand column and in twenty-four columns to the right are printed a record of the changes in paper duties as affected by different tariff law enactments. Thus, by following the lines from left to right, the complete history of tariff changes on any given description of paper can be seen at a glance.

Take the case of hanging paper, which appears to have been the subject of more continuous attention from tariff experts than any other kind of imported paper, the tariff duty provided by the law of July 4, 1789, was 7½ per cent ad valorem. In the following year the tariff was changed to 10 per cent and in 1792 to 15 per cent, going to 30 per cent in 1816 and to 40 per cent in 1824, this being maintained until 1842 when a change of 35 per cent is shown. The fluctuations in duty on this particular grade of paper continued up and down until 1922 when 10 per cent ad valorem, the present rate of duty, was named, this being the identical rate provided in the tariff act of August 10, 1790, an interval of 137 years!

Special Report No. 8 of the A. P. & P. A. will be found a most useful and interesting compilation,

BIRD SCREENS

All over North America



Wherever paper is made you will find Bird Screens at work.

The Bird Screen is the standard paper screen of North America. Twenty odd thousand tons of paper pass through Bird Screens daily.

If *you* are not using the Bird Screen a neighboring mill *is*. Ask them what they think of it.

BIRD MACHINE COMPANY
SOUTH WALPOLE — MASSACHUSETTS

EDITORIAL

one which should be of special importance and value to committees of associations within the industry whose duties consist of proposing changes in the paper schedules for the improvement of tariff provisions that may be inadequate, or otherwise reforming the duties charged on papers imported from foreign countries, and to such it is cordially commended.

The 1928 Paper and Pulp Mill Catalogue

MOST of the copies of the 1927 issue of the Paper and Pulp Mill Catalogue have gone where all good catalogues should go—in the hands of people where they will do the most good, or, into the hands of important men connected with paper and pulp manufacturing plants. It has been our aim that this catalogue should be in the hands of all the buying and suggesting powers in every mill in the United States and Canada. Purchasing agents, general managers, chief engineers, chemists, superintendents, in fact all men who either buy equipment for mills, or suggest the buying, should have a copy of the Catalogue.

It is possible that there are many men in the industry who could make real use of this publication, and who as yet haven't a copy of the Catalogue. We still have a number of copies on hand, and would be pleased to furnish these to anyone who can make real use of the book and feel it will be helpful to their company.

Plans are already under way to make the next issue—1928—of this publication of much more importance than any past issue has been. However, it is a little too early to advise the industry just what these improvements and additions will be. They will be far-reaching, and of such character that no important man in the industry can possibly afford to be without a copy.

It should be remembered that these books are sent **free** to paper and pulp manufacturing plants, and the important men connected with these plants, in order that these men may be saved many hours time in a year and not find it necessary to ramble through numerous circulars, booklets, and catalogues of all sizes, when they can have all the information these different publications possess, **in one book.** And the features that will be added to the next edition of the book will make it of much more importance and helpfulness to the user.

To those who feel they have a need for the Catalogue, and are officials, buyers, or suggesting agencies in the paper and pulp mills, we will furnish a copy as long as our present supply lasts. When that is exhausted, we will place their names on a list to receive the 1928 issue.

Our ability to send the Catalogue to those who want it—to those who need it—will be greatly enhanced if anyone who changes his position from one company to another, or from one capacity to another, would kindly advise us of this change so we can adjust our records and keep them up-to-date and correct. We would also welcome a letter from any person connected with the paper industry in an official capacity who could make use of the book and has not heretofore received one.

The idea behind the work of this catalogue and presenting it to the men in the paper and pulp field, is to be of **service** to the paper and pulp manufacturers. Our measure of service is reflected in the amount of time, assistance, and real service that the book gives a man in the field, and in turn his co-operation with us to keep the book in the hands of those who can use it, by keeping us in touch with his location, position, and wants in the paper and pulp industry.

Sharks and Forestry

THE connection between sharks and forestry is not so remote as might be supposed. One of the objections made by cattlemen to the conversion of grazing lands to forest lands is that it would increase the cost of leather, leather being commonly made from cowhide or calfskin. When it is known that the tanned skins of sharks are as durable as any leather now in use and can be supplied much more plentifully and at a lower cost than leather from cattle, it will be wondered why shark skin is not more used as a substitute for leather. Some sharks grow to a length of sixty feet and hence there are great possibilities for shark skin as leatherbelting. The capture of sharks for their skins may be expected to aid in keeping down a voracious fish that preys on fishes used by man for food. With a lessening of their depredations, our supply of food fish like blue fish, haddock, mackerel, cod and herring would be correspondingly increased.

When, therefore, cattlemen protest against the growing of timber crops on grazing lands because of a possible famine in beef and leather, we need not take their protests too seriously; for it should not be difficult to prove that the sooner cattle and sheep are off the ranges and cattlemen obliged to cultivate lands for forage crops from trees, the better it would be both for cattleraisers and the timber-using industries. The advantages likely to result from changing grazing lands into timberlands are referred to in Dr. Robert T. Morris's book on **Editorial Silence** which has been published for him by The Stratford Company, Boston. Doctor Morris's choice of title bears on the failure of newspaper editors to call attention to existing possibilities for developing food supplies for coming generations, instead of compelling the public to read news of crimes, scandals, and similar sensational stuff.

THE PAPER INDUSTRY

REG: U: S: PAT: OFF

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Principles of Depreciation

Their Application in Determining When Equipment Should Be Scrapped

J. J. BERLINER

Accountant and Auditor

DEPRECIATION may be defined as the reduction in value of an asset at a given period of time, as compared with value at a previous period of time. This shrinkage in value may be the result of obsolescence, inadequacy, extent of time, or wear and tear. Depreciation may be further classified as to being either (1) external, (2) internal. It is external when it is caused by influences outside of, and apart from, the asset itself, such as for example, obsolescence or inadequacy. It is internal when it is caused by a natural law such as wear and tear, such as results, for example, when a machine is in use.

Obsolescence

The problem of obsolescence is a very important one. At some time or other, the question arises whether or not to scrap a unit or part of the equipment. Many factory executives have scrapped machinery where it was unprofitable to do so. On the other hand, many have failed to scrap machinery where to do so would have been profitable.

A machine is effectively obsolescent when production can be carried on more cheaply by replacing it with an improved one, after adding in the original cost of the old machine (less its scrap value and less the actual physical depreciation to date) to that of the new machine. .

How to calculate whether a unit is obsolete or not, can be best demonstrated by taking a typical problem.

Let us assume the following case:

A machine purchased three years ago, cost $2,400. Its cost of operation (labor, power, etc.) is approximately $2,100 per year. The total life of the machine is estimated at six years. At present, there is a greatly improved machine, with a slightly larger capacity on the market. Because of its ease of operation and lower costs, through improvements in the machine, the cost of operation is reduced to $1,600 per year. The cost of the new improved machine is $4,000.

Should the old machine stay in operation, or should it be scrapped and replaced by the improved machine?

To answer this problem, there are two elements entering into the cost of production to consider: (1) the unrecovered investment; (2) the operating expenses which consist of items such as gas, power, labor, etc. By unrecovered investment is meant the original cost of the machine, less the actual depreciation. In the case of the old machine, the unrecovered investment is determined thus:

Cost of old machine	$2,400.00
Estimated scrap value at end of 6 years	100.00
Amount to be depreciated over life of machine	$2,300.00
Depreciation for one year—$2,300 ÷ 6 yrs. =	383.33
Depreciation to date (three years)	1,150.00

Putting the above data in concise form, matters stand as follows:

Unrecovered Cost		Old Machine	New Machine
Cost	$2,400.00		
Depreciation	1,150.00		
		$1,250.00	$4,000.00
Current Operating Costs		2,100.00	1,600.00

If money is worth 6 per cent, the capital cost of operating the old machine is: $2,100 ÷ .06 = $35,000.00. That is, if the operating expenses are capitalized, it is equivalent to a capital investment of $35,000. On the other hand, the capitalized cost of the new machine is $1,600 ÷ .06 = $26,666.67. Add-

ing the capitalized costs to the original costs of the respective machines, we have the following:

Old Machine

Original cost less depreciation	$ 1,250.00
Cost $2,400.00	
Depreciation 1,150.00	
$1,250.00	
Capitalized operating cost	35,000.00
Total capitalized cost	$36,250.00

New Machine

Original cost	4,000.00
Capitalized operating cost	26,666.67
Total capitalized cost	$30,666.67

From the above illustration, it is evident that a substantial saving would result if the old machine were scrapped. If we scrapped the old machine, our loss on the old machine would be ($1,250, less scrap value $100) $1,150. Adding this loss to the total capitalized cost of the new machine, would give the final cost of $30,666.67, plus $1,150, or $31,816.67, as compared with the total cost of the old machine of $36,250. By scrapping the old machine, there would be a saving of $36,250, less $31,816.67, or $4,433.33.

Inadequacy and Replacement

The problem of inadequacy and replacement is one very similar to that of obsolescence, but differs in this respect: the question of inadequacy is one of size and power, while that of obsolescence is one of type and quality.

When a given machine becomes inadequate, the problem then arises whether it is cheaper to add another unit of the old machine type, or whether it is cheaper to scrap the old machine, and purchase a new one, with a larger capacity.

Let us assume the following facts:

A machine with a capacity of 30 units per hour has been in operation for two years. This machine is now inadequate, insofar as it is desired to increase the capacity to 60 units per hour. The cost of an additional 30 unit per hour machine is $1,300; that of a 60 unit per hour machine is $2,000. The life of the old machine is estimated at five years, and the amount of depreciation to date is estimated at $468. Assuming that the operating costs are approximately the same for both machines, we have the following facts:

Old Machine

(Cost less depreciation) $1,300 — $468 =	832.00
New machine of same capacity—cost	1,300.00
Total cost of two machines	$2,132.00

New Machine

60 unit per hour—cost	$2,000.00

From the above illustration, it is evident that it is more economical to add another 30 unit per hour machine, than to scrap the old machine and substitute a 60 unit per hour machine. For, if the 30 unit per hour machine were scrapped, matters would stand as follows:

New machine (60 units per hour)	2,000.00
Old machine (30 units per hour) 832.00	
Less scrap value 130.00	
Loss on old machine if scrapped	702.00
Total cost of new machine	$2,702.00
Total cost of two-30 unit per hour—	
Old 30 unit p. hr. machine... 832.00	
New 30 unit p. hr. machine..1,300.00	
Total	2,132.00
Loss if old 30 unit per hour machine were scrapped..	$ 570.00

Internal or Physical Depreciation

In estimating the physical depreciation of an asset, the following factors are to be considered: (1) life of asset; (2) cost; (3) residual value; (4) extent of repairs and renewals during life of asset. There are a number of methods used to calculate depreciation, and these are as follows:

1. Equal or Fixed Annual Installment Method.—Each year's revenue is charged with the actual cost of repairs and small renewals, and in addition, with an equal fraction of the original cost of the asset. A fixed percentage of the original cost is charged to revenue each year so as to reduce the asset to scrap value at the end of its life. Repairs and renewals are charged to revenue as they occur.

The annual depreciation charge is calculated by simply taking the cost of the asset, less its estimated scrap value, and dividing. This charge is debited to the nominal account, known as "Provisions for Depreciation" (this account being later closed into the profit and loss account) and credited to the account known as "Reserve for Depreciation," or it may be credited directly against the asset.

Illustration of Method 1.—A plant cost, say, $50,000 on January 1, 1920. Estimated life 10 years. Value of plant as scrap at end of 10 years—$5,000. Rate of depreciation, 10 per cent. Amount to be written off over 10 years, $45,000 ($50,000, less scrap value, $5,000).

The following shows how this method is taken care of on the general ledger (assuming depreciation credit is credited directly against plant account):

Plant Account

1920			1920		
Jan. 1	Cash	$50,000	Dec. 31	Depreciation	4,500
				Balance	45,500
		$50,000			$50,000
1921			1921		
Jan. 1	Balance	$45,500	Dec. 31	Depreciation	4,500
				Balance	41,000
		$45,500			$45,500
1922					
Jan. 1	Balance	$41,000			

The method illustrated above is not scientific nor

convenient, as separate calculations must be made with each addition to the plant. Moreover, it has this unfavorable feature: Each year's charge for depreciation against revenue is equal.

At first sight, this would seem correct but in reality it is unfair, because repairs and small renewals are very light during the earlier years and, as a result, there are small charges against revenue at a time when it is receiving the benefit of the best period of the asset's life. On the other hand, in the later years, when the plant is much worn down and repairs are heavy, the revenue account bears a greater burden, although it has only the benefit of machinery that is well worn.

2. Reducing Installment Method.—Under this method, a fixed percentage of the diminishing value of the asset is charged to revenue annually, so as to reduce the asset to scrap value at the end of its life. In addition, repairs and small renewals are also charged to revenue. By this method, the direct charge for depreciation becomes gradually reduced from year to year, the depreciation being heavy during the earlier years, when repairs and partial renewals are small, and lighter as repairs and partial renewals increase. The annual charge of depreciation is thus more even as compared with the Fixed Installment Method, where the annual charge for depreciation is constant, while repairs increase.

Furthermore, it is more simple to operate than Method No. 1, because it is not necessary to make separate calculations on additions to the asset during subsequent years, as the percentage of depreciation for the year is always figured upon the balance shown by the asset account.

Illustrations of the Diminishing Installment Method.—A fleet of motor trucks cost, say, $25,000 on January 1, 1922. Value at end of estimated life of five years is figured as $4,000. Rate of depreciation, 20 per cent.

Auto Delivery Equipment Account

1922		1922	
Jan. 1 Trucks	$25,000	Dec. 31 Depreciation (20% on $25,000)	$ 5,000
		Balance	20,000
	$25,000		$25,000
1923		1923	
Jan. 1 Balance	$20,000	Dec. 31 Depreciation (20% on $20,000)	$ 4,000
		Balance	16,000
	$20,000		$20,000
1924		1924	
Jan. 1 Balance	$16,000	Dec. 31 Depreciation (20% on $18,000)	$ 3,600
Jan. 1 Addition	2,000		
		Balance	$14,400
	$18,000		$18,000
1925			
Jan. 1 Balance	$14,400		

Under this method, more time is required to write off the asset to its break-up value than under Method No. 1.

3. Depreciation, Repairs and Renewal System.—In this method, an estimate is made in advance to cover the following: (1) cost of the asset; (2) cost of estimated renewals and repairs. The total of these two items, less the scrap value of the asset, is divided by the estimated life, and the result is the annual charge to depreciation. The main object of this system is to equalize the annual charge against revenue to cover depreciation, repairs and renewals.

Illustration of the Depreciation, Repairs and Renewals Fund.—A machine costs say, $4,000 on January 1, 1920. Estimated life, 5 years. Value as scrap at end of 5 years estimated at $200. Amount to be written off over 5 years, $4,000 — $200 = $3,800. Total estimated repairs and minor renewals of parts $500 for the 5 years. Total average yearly charge to revenue is 20 per cent of $3,800 plus ($500 ÷ 5) or $860; computed on the cost, the rate is 21.5 per cent (860 divided by $4,000 = 21.5 per cent).

Machinery and Equipment

1920	
Jan. 1 Cash	$4,000
1922	
Jan. 1 Addition	4,000

Depreciation, Repairs and Renewal Fund Account

1920		1920	
Dec. 31 Repairs & renewals	$ 125	Dec. 31 Profit & Loss Account (21.5% on $4,000)	$ 860
Balance	735		
	$ 860		$ 860
1921		1921	
Dec. 31 Repairs & renewals	$ 165	Jan. 1 Balance forward	$ 735
Balance	1,430	Dec. 31 Profit & Loss Account (21.5% on $4,000)	860
	$1,595		$1,595
1922		1922	
Repairs & renewals	$ 225	Jan. 1 Balance forward	$1,430
Balance	2,925	Dec. 31 Profit & Loss Account (21.5% on $8,000)	1,720
	$3,150		$3,150
		1923	
		Jan. 1 Balance forward	$2,925

The above method, however, is not to be recommended without discrimination, for, being based more on estimates than either of the two preceding methods, it should only be put into practice where the experience of the past furnishes a reliable barometer of the future.

4. Sinking Fund or Depreciation Fund System.—In this method, an equal amount is charged to revenue each year, and credited to a Sinking Fund Account, or a Depreciation Fund Account. This amount is usually invested in outside investments and allowed to accumulate at compound interest. This method is a very excellent one.

Illustration of the Sinking Fund or Depreciation Fund Method.—A plant cost, say, $110,000 January

1, 1920. Estimated life, 10 years. Estimated value of plant as scrap at end of 10 years is $10,000. Amount to be accumulated by the Sinking Fund or Depreciation Fund is $100,000 ($110,000—$10,000). The annual charge to revenue and credit to the fund in this case amounts to $7,950.46. This figure is derived from the following calculations:

Assuming that money will, on the average, earn 5 per cent interest, an interest table will show that $1, compounded at 5 per cent will, at the end of 10 years, amount to $12.577892. Now, if $1 amounts to $12.577892, the yearly figure required to amount to $1 will be $1 divided by 12.577892, or $.0795046. Therefore, if an annual installment of .0795046 produces $1 in the period stated, the annual amount required to raise $100,000 in 10 years will be $.0795046 \times 100{,}000 = \$7{,}950.46$ per year.

However, it is not the general practice to make such calculations when a sinking fund is being created, as practically all calculations can be obviated by using one of the interest tables now on the market.

These tables show the equal annual sums to be set apart and accumulated at compound interest to provide $1 at the end of any number of years, generally up to 100 years and at various rates of per cent. The annual installment is quoted as a decimal (six to eight places of $1). This figure is simply multiplied by the amount to which the sinking fund must accumulate and the annual charge of revenue thus ascertained.

5. **Re-valuation Method.**—In this method, a valuation is obtained, and the difference between the valuation and the previous figure is charged to the profit and loss account.

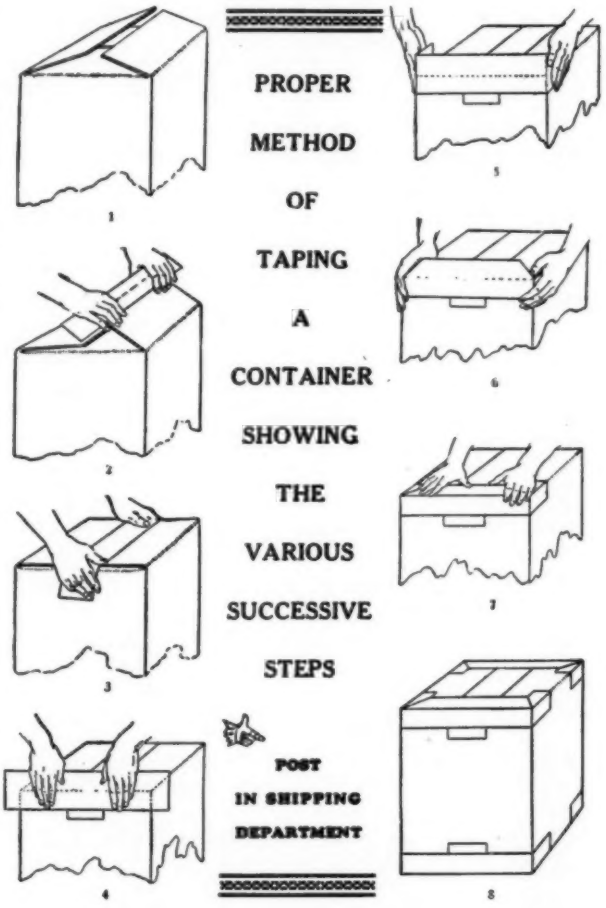
Illustration of the Re-valuation Method

1920		1920	
Jan. 1 Cash	$5,000	Dec. 31 Balance (Actual value on December 31)	$6,000
Jan. 25 Repairs	150	Profit & Loss	875
March 15 Additions	1,500		
Oct. 10 Repairs	225		
	$6,875		$6,875
1921			
Jan. 1 Balance forward	$6,000		

Sealing Fiber Cases

THE American Railway Association and the American Railway Express have satisfied the need for education of shippers and packers by an attractive special folder exhibiting the best methods of sealing with adhesive. The Philadelphia Quartz Company, together with other manufacturers of silicates of soda and adhesives, has co-operated in the preparation of a folder entitled, "Fiber Cases, Good Sealing for Safe Delivery," and some of the illustrations are given in the accompanying diagram.

In conjunction with tests by the U. S. Forest Products Laboratory, the experiments proved that a fiber container sealed by fastening the inner and outer flaps securely and then reinforced



along the horizontal end scores (edges) with gummed tape, showed materially increased resistance to transportation hazards as compared with a container not taped.

Pulping Scottish Pine

RECENT investigations of E. Hägglund on the pulping of Scottish pine are of suggestive value. This wood is very rich in rosin and the ordinary sulphite process using lime is, of course, inapplicable. If magnesia is substituted for lime as a base, better results are obtained.

The pulp produced in this way still contains rosin, which is dissolved to a great extent at the beginning of the cook and is later reprecipitated on the fiber. The preliminary removal of the rosin by extraction with benzene resulted in a brittler fiber. The preliminary benzene extraction was used on pine hardwood, the yield of pulp from which by the soda process being uninfluenced thereby.

Lessons in Paper Making

Lesson XIII—The Wire; Operation

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co., Canton, N. C.

This article is the thirteenth of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general education course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

IN LESSON XII, we discussed the resistance offered to the wire as a medium of drive and made the following statement: "The strands of wire are capable of a certain amount of extension, but they are **not elastic.** Once **stretched** they can **not shrink** again to their original length." This statement provides us with a guiding rule for safe wire control. **Tighten up the slack;** make every square inch of the wire area subject to **equal tension; work on the slack.** All the other clothing on the machine possesses elasticity, and the quickest way to correct faults in such clothing is to **slacken the tightest spot.** The wire, however, is **not elastic.** Once stretched, whether it is by the stretch roll, a hard substance on the surface of a roll, or even some hard substance pressed into the surface of the wire by the dandy, the strands of wire will retain the length they have been **strained** to.

If the uneven **tension** is applied by the stretch roll and we followed the rule of the other clothing and slackened the tightest spot, we would certainly prevent wrinking because we would then have **equal tension.** But there would not be **enough tension,** and we cannot successfully run a **slack wire.** The wire must present a **taut, even** surface on which the paper is formed. Should the wire be a little too slack, the weight of the mixed volume would cause the wire to sag slightly between the tube rolls. Passing each tube roll would be equal to climbing a very small incline. This has a tendency to retard the slice velocity of the mixed volume, disturbing the formation. This effect is greatest where the weight of volume is greatest, and that is nearest the slices.

Not only will the velocity of the mixed volume be retarded, but over this area the tube rolls will on high speed, throw small particles of stock clear from the liquid volume, only to have them fall back again to form lumps. Keep the wire **taut** but **not strained.**

Reading the Tension

As the correct tension to be applied is of such importance to the wire, it is equally important that we have some means of accurately "reading" this tension. To speak of an accurate reading at once implies, "How much tension is correct?" and, "How and where is it applied?" Assuming the mechanical upkeep of the fourdrinier as discussed in Lesson XII to be efficient, we still have two different conditions to consider:

1—Tension on an unloaded wire, and
2—Tension on a wire carrying its maximum load.

Under the first condition of starting up a new wire, the weight of the stretch roll **without** applied pressure of the adjusting screw rods, transmitted through the stretch roll bearings, will be sufficient. As the wire runs slowly round, the slack will be apparent from the horizontal center of the couch roll, the driving force, to the vertical center of the stretch roll. Follow the slack down with the stretch roll, keeping the full weight of the roll on the wire all the time. A few revolutions of the wire will suffice to take up all the apparent slack. That is, the wire will be fitting **taut** to its woven length, **not yet subject to its normal operating strain.** Check the height of the stretch roll journal centers from the sole plate while it is still running. Stop the wire and re-check.

The advantage of the re-check is particularly apparent when using the inverted open type of stretch roll bearings. The drive of the couch roll will keep the unloaded wire taut from the breast roll to the couch. If any of the outside carry rolls, or the stretch roll itself are out of true vertical adjustment, the weight of the stretch roll, supported by the wire, will show the lowest side. In this first putting down of the stretch roll, it is important to remember the wire is **not elastic.** The stretch roll **must** be put down while the **wire is running** so that its weight can be applied **evenly** over the **whole length of each strand of wire. Unless we are trying to eliminate slackness from a damaged local spot,** we should never apply stretch roll tension with the wire stopped.

Under the second condition, where the wire is carrying its maximum load, the wire strands are actually stretched by **resistance of load to drive.** The wire, taut before it received the load of mixed volume, will again show a gradual slackening, therefore **while the first sheet is being formed on the wire,** the stretch roll must be gradually lowered, taking up the slack and keeping the wire taut.

During the first eight hours run as the full effect of the resistance of the flat suction boxes to the couch roll drive is registered on the wire by the gradual

stretching of the wire strands, the stretch roll will have to be lowered to **maintain** the necessary tension. We therefore see the **greatest** actual tension **applied** to the wire is that applied by the resistance of the flat suction boxes, created by atmospheric pressure on the surface of the wire.

The stretch roll acts in the capacity of an idler to take up the slack, thus keeping the wire taut enough to be responsive to its drive. This condition leads us to a study of the distribution of load on the wire. It has been stated that the drive of the couch roll will keep the wire taut over the whole upper or making surface from the breast roll to the couch roll. This statement is true of an unloaded running wire, but not quite true of a loaded wire. The greater the hydration of the fibre, that is, the greater the atmospheric pressure created by the suction of the flat boxes, the less it is true. All resistance to drive is cumulative at the point of drive. The greatest resistance to drive is that of the operating suction boxes. Between these two points, on the same plane as the suction boxes, we have the wire guide roll.

The peripheral surface of the driving couch roll is on a lower plane than that of the guide roll. The greater the angle of drop, the more sensitive the action of the guide roll. This is due to the greater arc of contact made by the wire to the guide roll and also because the cumulative tension of drive overcoming resistance is exerted in pressure on the peripheral surface of the guide roll. We therefore find the **tightest area of the whole wire** to be that area from the holding resistance of the last suction box to the driving contact of the couch roll.

At the breast roll the wire has to carry the load of mixed volume delivered from the slices. Between the breast roll and the first tube roll there is an area of unsupported wire. On this unsupported area there is not only the weight of volume delivered, there is also the **force** of slice velocity. As the machine speed is raised, a greater volume of lighter density must be carried behind the slice. The slices are also carried lower than would be the condition on a much slower speed. We therefore have the liquid volume delivered with a greater force to the unsupported area of wire. The action of this weight delivery, however, **will not stretch the wire strands.** It has no braking action on the wire. As the wire is resilient, the sagging between the breast roll and the first tube roll is damaging to the formation of the sheet rather than to the wire. Due to the braking action of the suction boxes, the tension of drive pull is greater between the last suction box and the driver than it is between the first suction box and the breast roll.

If we experiment by raising the stretch roll while the wire is fully loaded, we will find the first evidence of slackening showing where the liquid volume is heaviest, and the wire would still show taut over our described "tightest area." We know that resistance to drive is cumulative at the point of drive. We must also remember that having once passed, in this case the horizontal center of the driver, **slack** is also cumulative until it is again on the same plane as the point of highest driving force. The **weight** of the stretch roll is therefore used to keep the wire taut on its return journey, and it is by the stretch roll we must eliminate any sagging of the wire caused by the weight of the mixed volume delivered.

We have described the stretch roll as an idler. If we can so arrange the hydration of the fibre so that the resistance of the flat suction boxes to drive will permit the **stretch roll to run free in its bearings,** to be an idler in actual fact by keeping the wire taut with its **own weight,** then we will have the ideal tension applied to the wire.

The writer has previously written and declaimed that the degree of hydration is controllable as to ratio, depending on the final characteristics desired in the finished paper. In his present work with the Champion Fibre Company, the writer has recently used a pulp cooked in such a manner to yield the full strength properties of the fibre without being compelled to develop excessive hydration. Under its usual beater and machine treatment, this pulp showed a test of 1.75 per folio pound. As the quality of paper ordered specified point per folio pound, we were enabled to cut out the use of one jordan, speed up the machine, and still produce a better strength test than that ordered. The vacuum on the flat boxes registered between four and five inches of mercury and that on the couch roll eleven inches. As the machine carried five flat boxes, the suction was spread over a large area, therefore we had **very little resistance to the wire drive from this cause.** Eliminate some of the wire strain in the **pulp mill and beater room.**

Suction Box Operation

Water is the papermaker's most important tool. "Keep the fibre in suspension," is a slogan well known to the machine crew. After the fibres are woven into a homogeneous sheet, however, the object is to remove the now undesirable water **without** disturbing the formation achieved, and at the same time compact the loosely woven fibres by pressure. When operating suction boxes, we are apt to lose sight of the latter important function in our eagerness to accomplish the water removal. The number and type of boxes used usually depends on the average basis weight of paper to be made.

Box covers of different woods, various diameters and spacing of holes, fully slotted, staggered slots, or no slots at all, are all details of design that are generally arrived at by the superintendent with a view to meeting local conditions. The **operation** of the boxes, however, rests with the machine tender. By his continuous observance of the factors governing the conjunction of atmospheric pressure, paper,

wire, and suction box covers, he can do much to maintain a high quality of paper and a low operating cost in wires and suction box covers.

In this present lesson, we shall not deal with the **design** of boxes, but will confine ourselves to their operation. The two most important factors are lubrication of the box covers, and the **amount** of area over which the atmospheric pressure is to be spread.

Water is the medium of lubrication, and if it were possible in operation to present a volume of **free** water, as distinct from the water of hydration, a physical component of the fibre to each box, then we would reduce the danger of the wire cutting the box covers to a minimum. This is not possible, however, and we therefore find our suction boxes divided into two groups, **wet boxes** and **dry boxes.** The first group precedes the dandy, and the second group comes into operation after the dandy has fulfilled its function of applying line contact pressure to the wet sheet.

In the difference between the two pressures, line contact pressure and atmospheric pressure, we have the guide to successful operation of the suction boxes and the dandy roll. The best example of line contact pressure is seen in the press roll arrangement. It is computed by the total weight applied, roll and leverage weight, divided by the number of square inches formed by the line contact of the press rolls. Dr. Reese of F. C. Huyck & Sons, Albany, N. Y., says, "This latter factor is variable, being dependent on the diameter of the rolls, the density and thickness of the rubber and weight applied." The broad principle arrived at, however, is, "The greater the **area of contact** the more gentle the pressure applied." Crushing is a coagulation of the fibres into bundles caused by pressing the water from the fibres too rapidly, that is, a pressure **too concentrated.** We can reduce the pressure applied either by taking off weight, **or spreading the weight over a greater area.**

In arranging our press sequence we can also allow a harder density of rubber on the third press bottom roll than that on the first press, a lesser couching of the third press top roll, or carry greater leverage weight. Any of these factors will **increase** the pressure concentration and is made possible by the lesser water content of the paper after passing through the first and second press. The converse of this roll adjustment is also true and will give a decrease in the **pressure** applied.

In the operation of the dandy roll we have no such latitude of control. The weight of the dandy is already reduced to a minimum in its construction in proportion to the width of the machine and diameter of the dandy. We can, of course, "hang the dandy" a little in its bearings, but our action in this connection is confined to very narrow limits. Our control then lies with the preparation of the fibre, the degree of hydration, the volume of free water of suspension used, and the **degree of suction** applied through the flat boxes. Due to the greater area of application, the atmospheric pressure cannot cause crushing of the sheet as is the case with line contact pressure. It can, however, be great enough to **overcome the power of drive and stall the wire.** Should this happen on an old wire it is very probable the wire would be torn off the machine.

We have used the term "degree of suction" because this is an immediately controllable unit. The **volume** of suction is a constant, being the displacement of the pump at the speed driven. We can control the degree of suction by (1) the density of seal, the resistance offered to the pump, and (2) the area of seal. By closing the suction box, the area of suction is reduced, the **volume** of suction is a constant, the **resistance** to the pump over a lesser area equals a higher **degree** of suction, and the raise is registered on the vacuum gauge. On the other hand, if we keep all the suction boxes in operation and increase the hydration of the fibre, that is, **slow up the stock,** we **increase** the **density of seal,** the volume is the same, the area of suction is the same, but the **resistance of the sheet to the passage of air to the suction boxes is greater.** Therefore the **degree** of suction applied is raised and registers the raise on the vacuum gauge.

As the sheet becomes less liquid, density of seal increases with a corresponding increase of resistance to the pump. There is therefore a gradually increasing atmospheric pressure applied to each box culminating at the last and driest box. The lesser **degree** of suction on the wet boxes, the greater degree of suction on the dry boxes.

As stated in an earlier paragraph, if we could present a volume of free water to each of the suction boxes, we could not only keep the box covers lubricated by water, thus reducing the friction between cover and wire, we would be better able to maintain the ideal pressure, a **gradually increasing atmospheric pressure.** Free water, which was water of suspension and on arrival at the suction box is merely water of contact, is easily pressed through the sheet and as a consequence such water can be operated under the dandy roll in greater quantity than the more resistant water of hydration

In relation to our study of **tension** on the wire, our safest operation of the flat suction boxes can be summed by two rules:

1—**The greatest area of box covers we can use without having one of them too dry,** and

2—**the lowest degree of suction on the flat boxes compatible with the quality of paper to be produced,**

save the wire. Next month we will deal with suction box design, sewing wire, ridges, etc.

New Opportunities in Different Fields of Steam Use

Analysis of Steam Pressures in Industries and Elsewhere Uncovers Definite Intermediate Pressure Field, with Problems and Apparatus all Its Own.

By MORRIS A. HALL, M. E.

STEAM has played a very large part in our commercial and industrial life and its uses are so widely known that it may come as a surprise to many engineers, manufacturers and others contacting with it in some form that a distinctly intermediate pressure field of use exists. This calls for different technique, knowledge, equipment, and methods.

Probably the earliest use of steam was in the steam engine, to produce power. From the first low-pressure engines, steam power producing units have grown and expanded. Pressures have increased rapidly with this steady expansion until today, in current engineering and manufacturing circles, the words "high pressure" refer rather to pressures above 250 lbs. than below it.

In this high-pressure field, methods for generation, distribution and use of steam are highly perfected. There are engineers who specialize in this field alone. There are manufacturers who produce equipment or apparatus solely for high-pressure use.

Probably the second great use for steam was that of heating. The development of this field, however, took a wholly opposite trend as regards pressure. Steam at moderate pressure was used in the beginning and the tendency toward the lower end of the scale has constantly increased. Engineering and manufacturing efforts have been directed toward effective heating with lower and lower pressures and have been successful. The development of the vacuum system of steam heating, now almost universal, has brought with it wide engineering knowledge of methods for the generation and distribution of steam at so-called "vapor pressures." It is now common practice to heat large structures with only ounces of pressure.

As a result, when one speaks of "low pressure steam" the phrase rarely refers to pressure above 10 lbs. It might be summarized as, all pressures at 10 lbs. or less.

The Third Great Field of Steam Use

Between these, the low pressures extending from 10 lbs. downward, and the high pressures extending from 250 lbs. upward, a third field has developed rapidly, but almost unnoticed, yet is found to be tremendously important, almost as large as either of the others.

Certainly, few have considered this intermediate field as a whole. It is now possible to do so for the analysis of pressures and temperatures, as well as the breadth and scope of this field, indicate that it is distinguished by its own problems, distinctive pressures, and apparatus or equipment designed wholly and exclusively for use of steam at these intermediate pressures. This field is the use of steam at pressures between 10 and 100 (or 150) lbs.

Because steam within this middle range, neither high nor low by present day understanding, is used so much in various industrial and non-industrial processes, the comprehensive term of "process" steam will be used to describe and explain it. This carries the meaning of intermediate pressures from 10 lbs. the upper range of present "low" pressures to 150 lbs. the lower end of "high" pressures. Process steam enters into many industrial and non-industrial processes.

In paper making, process steam finds wide use running through all the various steps in the work, as beaters, cookers (25-40 lbs.), dryers (10-40 lbs.), heaters and preheaters, evaporators, (to 40 lbs.), dry rooms, wood kiln dryers, pulp digesters (to 100 lbs.), paper drying lofts, air conditioners, pumping engines (to 125 lbs.), stuff pumps, flat-box pumps, various other pumps, for general power (so-called low-pressure engines, up to 125 lbs.), and elsewhere.

An examination of methods and equipment for handling steam at these "process" pressures shows that they have tended to lag behind the standards maintained in heating or low-pressure and power or high-pressure practices.

Research Classified the Problems

Recently, research engineers in the heating industry have begun to assemble the components of this newer field, classify them into proper logical groups and study the problems involved. Heating engineers have taken the lead in this, which was logical since the problems were closely akin to those of low-pressure heating and in many installations, the engineers have had to work with both low-pressures for heating and intermediate pressures for "process" apparatus.

In the study of steam utilization, it is convenient to break the subject down into three parts, generation, distribution and use.

There is no particular problems about process steam generation because high-pressure generating plants are suitable, reducing valves providing the desired lower pressures.

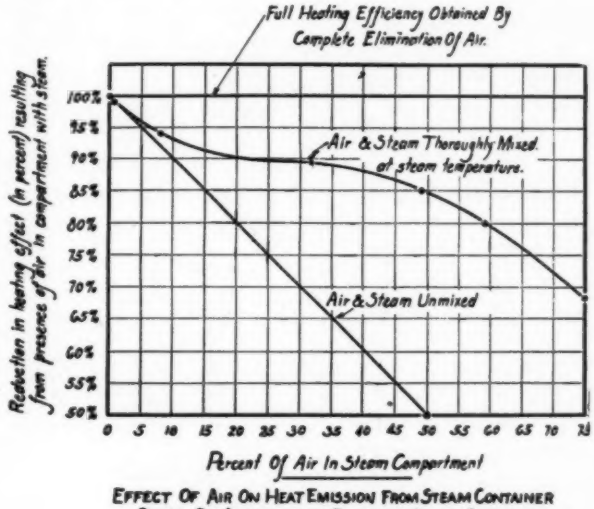
Similarly, the matter of use presents little difficulty. It is tied rather closely to the design of the steam-using apparatus in question. Designers of process steam equipment have been successful working along well defined lines.

Process Steam Distribution Not Simple

When we turn to process steam distribution or circulation, we find a different condition. Users have been left to shift for themselves. Methods of

insuring complete, correct circulation at these intermediate pressures they have had to work out in their own ways. Manufacturers of machinery using process steam have not always been able to call in steam specialists for working out their problems.

Heating engineers have long known that satisfactory and efficient steam distribution depends largely upon provision for positive removal from apparatus and pipe lines of air and water of condensation on


Full Heating Efficiency Obtained By Complete Elimination Of Air.
Air & Steam Thoroughly Mixed at steam temperature.
Air & Steam Unmixed
Reduction in heating effect (in percent) resulting from presence of air in compartment with steam.
100%
95%
90%
85%
80%
75%
70%
65%
60%
55%
50%
0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75
Percent Of Air In Steam Compartment

EFFECT OF AIR ON HEAT EMISSION FROM STEAM CONTAINER BASED ON ATMOSPHERIC PRESSURE INSIDE CONTAINER.

the one hand, and preventing the escape of steam of water containing unused heat on the other.

Those who have given the closest attention to these matters say that the importance of free and continuous discharge of air from the interior of the apparatus has not been, and even now is not being, fully appreciated. It leaks into the steam compartments when the equipment is cold and must be discharged completely before full operating efficiency can be realized.

The more quickly this discharge can be accomplished the sooner will the apparatus reach its maximum output. In some cases, air continues to enter the apparatus, carried over in mixture with the steam. It is a poor medium for the transmission of heat and so long as it exists within the apparatus in air-bound pockets or in mixture with the steam, will reduce the potential output. The effect of air mixture on the rate of steam transmission is shown in the accompanying graph.

The general analysis of the problem of handling process steam is put forward in the hope that it will stimulate further study along these lines by designing, testing and operating engineers.

The time is fast approaching, according to some observers, among them John M. Hart, of the Keyes Fibre Company, when a set of paper dishes, knives, forks and spoons will be made so cheaply that they can be discarded after every meal.

Meaning of pH Value

THE term hydrogen-ion concentration refers to the proportion of acid or alkali in solution which has received electrical charges, and generally designated pH value, pH being the symbol for hydrogen-ion concentration as used in chemical literature. In a recent bulletin of the Wagner Free Institute of Science, a diagrammatic representation is given of the scale of measurements of pH values.

In expressing the degree of hydrogen-ion concentration, a special application of mathematics is made, though fortunately not a very high phase. The pH value is based on the fact that pure water under normal conditions ionizes itself, producing 1 gram of ionized hydrogen in 10,000,000 liters. Expression of this will be the hydrogen-ion concentration. The method adopted is to take the logarithm of this fraction. The logarithm of 1/10,000,000 is minus seven (—7). If the solution is ten times as strong, the logarithm would be —6, and so on. In practice, the minus sign is omitted, with the somewhat awkward result that as the amount of ionization increases, the figure decreases, hence pH_3 represents a much stronger ionized solution than pH_7. Further, if the ionization of the hydrogen falls below 1 gram in 10,000,000 liters, it can be only by some increase of an opposing (negative) ionized atom or group. This is usually HO (hydroxyl), the characteristic and active group of alkalies. In accordance with the foregoing rule, this increase of negative ion diminishing the effective activity of the positive ion represents a greater dilution of the latter and hence a higher minus figure, but the minus sign being omitted as usual, the figure stands, for example, pH_8, which marks a diminution of the hydrogen-ion concentration by ten times that of pH_7. Proceeding in this way by adding substances containing hydroxyl ions, of which the common alkalies are the best representatives, we gradually reach a point in which the alkalinity is equivalent to and will exactly neutralize the hydrogen-ion concentration of pH_0. This alkalinity is represented by the figure pH_{14}, as shown below.

pH_7 (Neutral) N/10,000,000

Acidity		Alkalinity
pH_6	N/1,000,000	pH_8
pH_5	N/100,000	pH_9
pH_4	N/10,000	pH_{10}
pH_3	N/1,000	pH_{11}
pH_2	N/100	pH_{12}
pH_1	N/10	pH_{13}
pH_0	N/1	pH_{14}

Practically all the body fluids are represented by large unwieldy figures near the apex of this graph and so a short way of writing them is to use the negative power of ten to express the denominator. The abbreviation pH stands for the power (logarithm) of the number expressing the concentration of hydrogen ions. For example, the hydrogen-ion concentration of normal blood is about .000,000,04N, which in its abbreviated form is pH 7.39.

Pointers for the Engineer

By W. F. SCHAPHORST, M.E.

Boiler Firing Methods

AN INVESTIGATION in the paper industry by a large New York concern discloses the following facts as regards the method of firing boilers: In 33 per cent of the plants hand grates are used; in 9.5 per cent, hand stokers are used; in 62 per cent, automatic stokers; in 13.5 per cent, oil or gas burners; and in 3.8 per cent of them pulverized coal is used.

In the "average" plant of the principal industries of the United States, it was found that 50 per cent use hand grates; 12.5 per cent hand stokers; 35 per cent automatic stokers; 15.5 per cent oil or gas burners; and 2.5 per cent use pulverized coal. This indicates that the average power plant of the paper mill is well above the average of other industries.

Cause of Boiler Explosions

WATER is often the cause of boiler explosions. Low water or carelessness on the part of the operator are sometimes blamable.

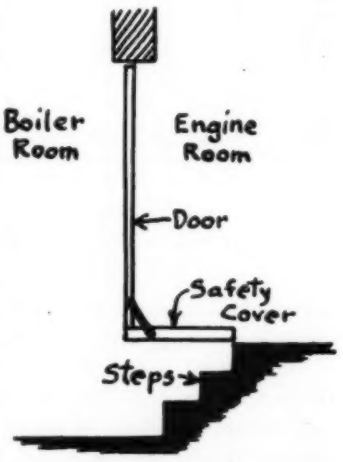
One of the best ways in which to avert water trouble, in the experience of the writer, is to seek the aid of engineers or someone who specializes in all kinds of water problems. Be sure to consult engineers who are unprejudiced and who do not habitually specify one type of apparatus or one chemical for every problem. Before the apparatus or chemical can be decided upon, every condition in and about the boiler must be studied, such as climate, rainfall, temperature, cost of fuel, analysis of the water in different seasons, cost of labor, availability of labor, first cost of apparatus, and so on.

For one extreme condition, consultants of this kind may sometimes recommend a mere chemical compound. Where fuel is very cheap and where labor is cheap, it may be best to use a compound inside the boiler. Where perfect water is wanted from a stream, lake, or well that is polluted, the problem is not so simple. What I want to emphasize is that no general rule can be laid down to solve water or scale problems. As a rule, no better advice can be given to officials in the pulp and paper industry than that they present their difficulties to responsible, reputable, unbiased engineers or chemists who are fully conversant with and deal exclusively with such problems.

With cheap compounds, it is true that the boilers may not last as long as where the water is purified and made absolutely soft. However, the engineers or chemists will inform the owner of the boiler beforehand how long he can expect the boiler to last. If the compound will be harmful to the boiler they will say so, and under such conditions it will be known when a new boiler should be installed or when the pressure needs to be reduced to a safe maximum. Science has advanced so far today that there can be no excuse for installing a boiler blindfolded. Enough is known about boilers today so that there should be no explosions whatever.

Safety Cover Over Steps

THIS sketch shows how an engineer eliminated the possibility of a broken leg or other injury in his engine room. The door shown used to swing into the boiler room but there was always a "hole" in the engine room over the steps into which a passer-by might fall. By changing the door to swing into the engine room and attaching the "shelf" to the door as shown in the sketch, the opening is now always covered when the door is closed. Of course, the door can be swung through only 90 degrees with the shelf on it, but that is no great inconvenience and is far preferable to a maimed body.



Boiler Baffling

THE principal objection to tile baffling is that tiles do not always render the baffle gas tight. This is due to the fact that tile always has an objectionable thickness. Owing to this thickness, which is one inch or more, tiling must always be placed so close to the tubes that are on both sides that the plastic refractory cannot readily be packed in and, when it is packed in, it is not sufficiently strong.

On the other hand, monolithic baffling is unsatisfactory because it possesses no positive expansion joints and consequently it cracks. This permits leakage of gas so that presently monolithic baffling leaks as much as does tile baffling, if not more.

The better way in the writer's opinion is to create a positive expansion joint by use of a corrugated sheet metal separator. This separator has very little thickness and permits complete closing of all corners and crevices. The gas passage is completely sealed in every way and there can be no leakage.

With the use of the corrugated separator, the baffle walls can be built in at any angle. Tubes can be removed and replaced without harming the baffles in the least. Cleaning the tubes with a rotary cleaner or renewing them leaves the baffles the same as when new.

On the other hand, when using a rotary cleaner with tiling, there is the ever present danger of knocking out the thin wall of plastic refractory between the tiles and the tubes, thus creating a leak. And as for monolithic walls, if cracks are already present caused by the forces of expansion and contraction, they are aggravated by the pounding of the cleaners, while incipient cracks may be enlarged into fuel wasting openings.

Furnace Design

EXPERIENCE has demonstrated that an arch of some kind is necessary for the proper ignition and sustained combustion of fuel. While this is the primary function of arches, other important conditions relating to furnace efficiency and capacity also enter into furnace design. One condition that is rapidly coming into prominence is the smoke problem. It is now well known that correct combustion eliminates smoke. Largely because of non-recognition of these relations and lack of early knowledge of the science of combustion, development has necessarily been slow. The proper design, construction, and location of furnace arches so that they will perform their intended function is as much a scientific problem as is the designing of a boiler or stoker.

Many engineers even at the present time are prone to accept the fantastic and gamble with untried principles. Whereas the changing of the simplest detail may be helpful in some instances, it surely will not cure all ills. After all is said the best guides are—facts based upon trials and experiments. It is a well known fact that the right kind of combustion arch eliminates smoke.

Engines Shook Buildings

WHILE talking to an engineer not long ago I was told of an interesting engine installation in the Middle West that gave considerable trouble for quite a while.

Two engines, alike, direct-connected to generators, were installed side by side. They generated current both day and night. Part of the time one was operated, part of the time the other, and during heavy loads they were operated in parallel.

When operated separately, things weren't so bad. The buildings shook and some people claimed that outside buildings shook also, but the shaking was endurable. When both were run together, however, going at the same speed, in unison, the plant was the joke of the whole community. The builders of the engines were gaining for themselves a very undesirable reputation.

After a while, the manufacturers sent one of their engineers out to pry into the case, and, as so frequently happens, he found that the solution was simple. He found that the erection men had twisted things around somewhat—had put the valve belonging to engine No. 1 in engine No. 2, etc., the erection men evidently thinking that all engines of the same size and same make are strictly interchangeable.

Upon putting the correct valves on the correct engines, and changing things around as they should have been in the first place, the vibration absolutely disappeared.

Too Busy to Inform

IT IS not uncommon for manufacturers to do things that cannot be explained, but why any of them should refuse to give needed information which would "boost" their product is beyond the writer.

I recently received a letter from a man employed by a prominent manufacturer, for instance, who said he "didn't have time" to give me data for which I have several times asked. He stated that after two or three months he "might" be able to attend to my wants.

Doesn't it seem rather strange for manufacturers to write like that? It's a fact, nevertheless. I can find no plausible excuse for putting off matters of this kind for two months at any time, busy or not. By means of printer's ink, complete information can be given to millions of people, let alone telling only one person.

I informed the above manufacturer that I am not in the market for their machinery personally, but the data I wished to gather would be helpful to them in their future sales. I wanted it for my files. I wrote to other manufacturers at the same time—some of them bigger than this one and some smaller—and they all responded willingly.

Future Feed Water Regulation

IT IS well known that the old type of boiler held much more water per h.p. than the modern type. Feed water regulation was not a "problem" in the old days. The engineer could set his pump "high" and go off for a considerable period. Then he would come back, shut the pump off, let the water level drop a few inches, and then start 'er up again.

But today the water drum is small, and it is getting smaller. Boilers are being operated at much higher capacity per square foot of heating surface. Hand feeding is out-of-date. Feed water regulators that are slow in responding to sudden changes of water level are also out-of-date. What is wanted is the regulator that acts instantly. Water level must not be allowed to vary from high to low and the reverse. Pumps and feed lines must be large enough to take care of the peak load and the regulator must have complete instantaneous and certain control over the pump.

Editorial Comment

By WILLIAM SIBLEY

The Cost of Sunburn

ACCORDING to Dr. Charles F. Pabst, specialist of skin diseases in Brooklyn, there would be nearly one million dollars saved to industry if the practice of over-exposure to the sun or the desire to acquire a coat of tan could be successfully discouraged. On this point Dr. Pabst recently said:

"Bathers should be warned that lying in the sun for hours at a time is a dangerous practice which results frequently in serious harm. The skin cannot manufacture pigments quickly enough to protect one from injury unless the first exposures are of short duration that are lengthened only gradually. The sun emits more ultra-violet rays at this time of the year than at any other time and over-exposure may permanently damage the skin cells and even result in death."

From the calculations made by this physician it is found that 10,000 working days are lost every year of the summer and early autumn period merely as a result of sunburn. This, at the average of $7 for an average wage, would result in nearly one million dollar loss for employers every year. There still remain a good many employees who have yet to take their annual vacation. There is an even larger number of people who are laying plans for the coming "Labor Day week-end" which they hope to stretch into five or six days or which they intend to crowd full of outdoor activity. A word of warning on this point, thumbtacked to the bulletin board, would perhaps save both discomfort and loss of time.

Dirt

IF YOUR office boy or janitor should leave as much dirt on your desk as you carry around with you every day in your mind, you would fire him on the spot.

Dirt—is matter out of place. And matter out of place misrepresents. Not long ago we were in attendance at a convention of bankers. While there, the writer talked with an influential, well respected banker from Pennsylvania. During our conversation, this banker, by way of emphasis, brought his right fist forcibly into his left palm with a resounding crack, and gave utterance to four or five burning, scorching, red-hot words of profanity—simultaneously with which his wife put her hand on his arm that she might attract his attention to her needs. You should have seen the banker's face when he realized his wife had heard him curse! It would have made a good death-mask for Dante! When she had disappeared, he turned and said: "My God—don't it beat hell how this damned profanity misrepresents one?"

Now we are going to discourse on the detrimental effects of profanity or vulgarity. You have more intelligence than the writer, and even the writer knows that if anyone retains this sort of mental filth it will surely misrepresent the possessor at just the time he least desires misrepresentation.

Lies are another form of mental dirt—the elimination of which is a contribution to success. Lies, worry, fear, doubt, distress—synonymous terms. Of course you don't lie—unless you are married or play golf. But why allow others to lie to you? You might as well lie yourself as to admit one from others.

Lies are terrible things. They are mosquitoes with buzzard wings and the voice of a Borah. They can be heard from Kamchatka to Edmonton, and they have caused more trouble than all the Kansas cyclones, Illinois tornadoes, California weather, Florida real estate men, yellow fever, gout, boll weavils, rust, smut, ticks, fleas, rattle snakes, scorpions, hooch, snapping turtles, indigestion, mad dogs, blizzards or floods that we have ever known or ever will know. Lies generate and destroy governments. They are powerful enough to compel a rabbi to take refuge in an Irish police station, a policeman to hide in a Jewish synagogue, or Satan to go to Sunday school and howl for ice cream cones. Back in the early days, one liar said George Washington was a woman-chaser. Another liar said he was a thief. This second liar succeeded in starting an investigation, then claimed he had proved that George Washington had stolen $2,000 from the United States Treasury. One newspaper in this city, 60 days before the termination of the Washington administration, said, editorially: "If this government can stand two more months of Washington, it will be well nigh indestructible."

Absurd—? No more so than the industrial, political and social lion being broadcasted today. On the political lie that the world court had no connection with the League of Nations, Congress was inveigled into permitting the entrance of the United States. On the oft-reiterated lie that adequate military defense contributes to war, thousands of otherwise loyal Americans have become pacifists, and our Army has been reduced from 576,000 men as established by the National Defense Act of 1920 to less than

—— on Timely Subjects

125,000 men. Because of the lies now being told by either paid-hirlings or dupes of the Third Internationale, we are witnessing the development of thousands of pink and semi-red university students who will make it increasingly hard, if not well nigh impossible, for us to maintain our republican form of government in the years to come. The industrial lies by organized labor leaders have cost untold misery and uncounted millions to both labor and capital, and have made the "Union Label" on products a voiceless appeal of the working man who put it there for liberty from distorted ideas and freedom from the shackles of misdirection. The religious lies told by the minority of one sect or creed about another creed or sect have given rise to over 200 religious denominations, veiled the great Truth as revealed by the Christ, rent asunder loving families, and cost humanity incalculable progress.

Why are all these lies permitted to exist—to grow? Because, being human, we are afflicted with the "deadly sitting habit"—mental inertia—indolence—laziness. Sweep away the mental dirt—the lies, worry, doubt and fear from your ownself. Then aggressively attack it in whatever form it appears. Attack it with the same aggressiveness you display in attacking the morning bath, and the fervor with which you breathe your daily prayer: "Give us this day our daily mail."

Finishes for Concrete Floors

WHEREVER the hard finish of a floor has been worn off in places the floor should be treated with a cement hardener. To do this, secure some of the advertised fluosilicates and dissolve as per direction or buy the solution ready for application. According to the condition of the floor this solution should be applied several times, always allowing the previous application to dry. The worn out places may have to be touched up with an extra application.

In lieu of fluosilicates, a thin solution of water glass (silicate of soda) may be used. This is sold in liquid form of 40 deg. Baume and should be reduced with equal quantities of water to permit penetration. In no case should the liquid remain on the surface or form a shell or skin on the surface as it will crack after drying or dissolve by water being spilled on it. Subsequent finishes will not hold firmly thereon and there is danger of shelling or chipping off of the finish coatings.

Cutting Power Costs Outside the Power Plant

LET a general manager inaugurate a campaign to save fuel and every eye will be turned on the power plant. Yet greater wastes of fuel occur in the transmission than in the generation of power; the one difficulty being that losses in expenditure are invariably multiple, small and invisible. Being invisible they are frequently overlooked. When recognized the smallness of the leak makes the loss seem inconsequential. But taken over the entire plant, the many small leaks total an aggregate loss frequently in excess of any loss sustained in the ordinary boiler plant.

It is an unfortunate fact that in many plants the production department is at loggerheads with the engineering department, with the result that in the matter of making changes in equipment or methods to effect a series of small savings, there is a conspicuous lack of co-operation. Metering every department and charging each for the power used is perhaps the most effective way in obtaining the desired co-operation—of making the production department actually seek aid from the engineering department in power cost reduction.

One of the important places to look for power leaks is in transmission equipment. Belts, gears, speed reducers or silent chains will almost always give an efficiency of 98 per cent when first installed—but what will they give two years afterwards and what are they giving now? Actual tests of your present equipment will reveal a power loss of 15 per cent—from the same equipment that when installed gave an efficiency of 98 per cent. Such fluctuation more particularly applies to belt drives.

Obviously it would be impossible to catalog in this brief editorial all the ways in which power consumption (fuel bill) can be reduced. Power transmission was mentioned only as typical of the countless ways every management can employ. Just what needs to be done will largely depend on local conditions. In some cases, it may be found that the expense of correction outweighs the value of the possible saving. Taking all the plants of this industry as a group, however, we believe it is possible to effect a 15 per cent cut in total power consumption through diligent and careful correction of minor leaks, outside the power plant.

The Paper Industry Annual Safety Contest

36 Mills "Ace High"—June Scores

PERFECT SCORES

	PARTICIPANT	NAME OF MILL	LOCATION
Group A	Mead Pulp & Paper Co.	Chillicothe	Chillicothe, Ohio
	Kimberly-Clark Co.	Falls	Neenah, Wis.
	Kimberly-Clark Co.	Niagara	Neenah, Wis.
	The Champion Coated Paper Co.	Paper, No. 2	Hamilton, Ohio
Group B	International Paper Co.	Niagara Falls	Niagara Falls, N. Y.
	Falls Manufacturing Co.	Oconto Falls	Oconto Falls, Wis.
	International Paper Co.	Fort Edward, No. 2	Fort Edward, N. Y.
Group C	Sorg-Oglesby-Smith Paper Co's.	Oglesby	Middletown, Ohio
	Sorg-Oglesby-Smith Paper Co's.	Sorg	Middletown, Ohio
	Provincial Paper Mills, Ltd.	Montrose Div.	Thorold, Ont., Can.
	The Adams Bag Co.	Chagrin Falls	Chagrin Falls, Ohio
	Bird & Son, Inc.	Phillipsdale	East Walpole, Mass.
	American Writing Paper Co.	Monotuck	Holyoke, Mass.
	Strathmore Paper Co.	No. 1, Woronoco	Woronoco, Mass.
	International Paper Co.	Webster, No. 9	Orono, Me.
	Strathmore Paper Co.	No. 2, Mittineague	Woronoco, Mass.
	Kimberly-Clark Co.	Atlas	Neenah, Wis.
	Mead Pulp & Paper Co.	Peerless	Dayton, Ohio
	The Upson Co.	Board Mill	Lockport, N. Y.
	Thilmany Pulp & Paper Co.	Appleton	Kaukauna, Wis.
	The Franklin Board & Paper Co.	Franklin	Franklin, Ohio
	Union Bag & Paper Corp.	Cheboygan Paper	New York
	Kimberly-Clark Co.	Badger-Globe	Neenah, Wis.
	International Paper Co.	Winnipiseogee	Franklin, N. H.
	Kimberly-Clark Co.	Neenah	Neenah, Wis.
	Defiance Paper Co.	No. 3	Niagara Falls, N. Y.
	International Paper Co.	Riley	Chisholm, Me.
	U. S. Gypsum Co.	Oakfield	Oakfield, N. Y.
	American Writing Paper Co.	Mt. Tom	Holyoke, Mass.
	Lincoln Pulp & Paper Co., Ltd.	Lincoln	Merritton, Ont., Can.
	U. S. Gypsum Co.	Gypsum, Ohio	Chicago, Ill.
	Sorg-Oglesby-Smith Paper Co's.	Smith	Middletown, Ohio
	Robertson Paper Co.	Montville	Montville, Conn.
	U. S. Gypsum Co.	Lancaster, Ohio	Chicago, Ill.
	American Writing Paper Co.	Holyoke	Holyoke, Mass.
	American Writing Paper Co.	Gill	Holyoke, Mass.

IMPERFECT SCORES

GROUP A			GROUP B			GROUP C		
Key	Rank	Rate	Key	Rank	Rate	Key	Rank	Rate
A- 4	5	.03	B-16	4	.05	C-16	30	.07
A-22	6	.04	B-13	5	.06	C-11	31	.10
A-10	7	.07	B- 3	6	.06	C-52	32	.12
A- 9	8	.12	B-18	7	.08	C-48	33	.14
A-25	9	.14	B- 5	8	.10	C-30	34	.18
A-12	10	.20	B-15	9	.11	C-10	35	.18
A-16	11	.26	B-29	10	.13	C-28	36	.20
A-17	12	.27	B-19	11	.13	C-14	37	.24
A- 5	13	.29	B-25	12	.14	C- 2	38	.28
A- 1	14	.31	B- 8	13	.16	C-45	39	.28
A-24	15	.37	B-24	14	.17	C-16	40	.33
A- 2	16	.39	B-12	15	.18	C-19	41	.38
A-20	17	.39	B-35	16	.21	C-53	42	.39
A- 3	18	.39	B-17	17	.30	C-20	43	.40
A-23	19	.46	B-36	18	.39	C-12	44	.50
A- 8	20	.51	B-20	19	.42	C-21	45	.54
A- 6	21	.52	B- 4	20	.44	C-51	46	.54
A-11	22	.89	B- 9	21	.50	C-28	47	.68
A-13	23	3.73	B-30	22	.58	C-22	48	.88
			B-33	23	.52	C-29	49	.88
			B-11	24	.63	C-54	50	.90
			B-34	25	.66	C-35	51	.92
			B-31	26	.84	C- 9	52	.96
			B- 2	27	.84	C-26	53	1.02
			B- 7	28	1.05	C-25	54	1.26
			B-10	29	1.64	C- 3	55	1.81
			B-23	30	1.79			

The following alphabetically listed mills are the leaders in their respective groups

	PARTICIPANT	NAME OF MILL	OFFICE
Group A	The Champion Coated Paper Co.	Paper, No. 2	Hamilton, Ohio
	Dill & Collins Co.	Philadelphia	Philadelphia, Pa.
	Hammermill Paper Co.	Erie	Erie, Pa.
	International Paper Co.	Hudson River	Palmer, N. Y.
	International Paper Co.	Otis	Chisholm, Me.
	Kimberly-Clark Co.	Falls	Neenah, Wis.
	Laurentide Co., Ltd.	Grand Mere	Grand Mere, Que., Can.
	Marathon Paper Mills Co.	Rothschild	Rothschild, Wis.
	Mead Pulp & Paper Co.	Chillicothe	Chillicothe, Ohio
	Nekoosa Edwards Paper Co.	Combined Mills	Port Edwards, Wis.
Group B	American Writing Paper Co.	Beebe & Holbrook	Holyoke, Mass.
	American Writing Paper Co.	Power & Repair	Holyoke, Mass.
	Bird & Son, Inc.	E. Walpole	East Walpole, Mass.
	Falls Manufacturing Co.	Oconto Falls	Oconto Falls, Wis.
	International Paper Co.	Glen, No. 5	Berlin, N. H.
	International Paper Co.	Niagara Falls	Niagara Falls, N. Y.
	Mead Fibre Co.	Kingsport	Kingsport, Tenn.
	Rhinelander Paper Co.	Rhinelander	Rhinelander, Wis.
	Strathmore Paper Co.	No. 1, Mittineague	Woronoco, Mass.
	Strathmore Paper Co.	No. 2, Woronoco	Woronoco, Mass.
Group C	Bird & Son, Inc.	Phillipsdale	East Walpole, Mass.
	International Paper Co.	Riley	Chisholm, Me.
	Kimberly-Clark Co.	Atlas	Neenah, Wis.
	Kimberly-Clark Co.	Neenah	Neenah, Wis.
	Lincoln Pulp & Paper Co., Ltd.	Lincoln	Merritton, Ont., Can.
	Marinette & Menominee Paper Co	Menominee	Marinette, Wis.
	Provincial Paper Mills, Ltd.	Montrose Div.	Thorold, Ont., Can.
	The Upson Co.	Board Mill	Lockport, N. Y.
	U. S. Gypsum Co.	Gypsum, Ohio	Chicago, Ill.
	U. S. Gypsum Co.	Lancaster, Ohio	Chicago, Ill

NASACO LOG

On Their Toes

We certainly have to take our hats off to the Neenah mill of the Kimberly-Clark Co. No lost time accidents since November, 1925!

Are You Going to Be There?

The startling news has come to us that already 1400 tickets have been sold for the banquet at the National Safety Congress to be held at the Stevens Hotel the latter part of September. Only 400 tickets left—so make your reservations for banquet and hotel accommodations early and be sure you will enjoy the Congress in full measure.

Interesting Report

The "Annual Industrial Accident Experience of Members—National Safety Council—1926," should be in the hands of every paper and pulp mill in the section. This report certainly shows the fruits of safety work in the past year, and whether or not efforts in this direction are worth while.

Page 13 of the report, containing the Paper and Pulp Section statistics shows an encouraging reduction made in the frequency rate in the past five years. Every year shows a marked reduction. The severity rate has come down too, although not quite as much as the frequency. The value of the contest shows itself prominently in these figures given on page 13. If you have not received a copy of this report, write to the National Safety Council at once.

West Virginia Talks Safety in Pamphlet

The "Safety First Pamphlet," issued monthly by the West Virginia Pulp and Paper Co., Tyrone mill is certainly fine, and we have no doubt but their splendid safety record is partially due to keeping Safety before them at all times.

Pointers for the Small Mill

The August issue of "National Safety News" has an interesting article by Richard Annear, Foreman of Receiving Department of the Esleek Mfg. Co., Turners Falls, Mass., entitled, "Handling Material Hints for Small Paper Mills."

TELLING SCORES

	January	February	March	April	May	June
No. of Mills	119	116	115	114	113	111
Total Hours Worked	8,363,734	7,876,213	8,573,278	8,707,808	8,292,249	8,398,894
No of Accidents						
Death	1	4	2	2	1	1
Perm. Disability	1	2	6	2	2	5
Temp. Disability	332	274	274	246	216	261
Totals	334	280	282	250	219	267
No of Days Lost						
Death	1000	4000	2000	2000	1000	1000
Perm. Disability	300	350	590	250	100	1025
Temp. Disability	3417	3204	3635	2520	2518	2579
Totals	4717	7554	6225	4770	3618	4604
Frequency Rate	39.95	35.56	32.89	28.72	26.14	31.80
Severity Rate	.56	.96	.73	.55	.44	.55

Developments in New Paper-Making Materials

By ROBERT M. BOEHM
American Pulp Corporation, Chicago

EVERYONE closely connected with the paper industry is more or less interested in the development of new paper-making materials. This has always been considered as a necessary alternative which must be resorted to when the recession of our wood supply makes it necessary to look for new sources of supply, but seldom has it been considered as being a source of supply which will compete under present conditions with wood pulp, in respect to yield, strength, quality and cost. It has always been regarded to some extent as an evil which some day may become necessary, but which should be avoided as long as possible.

This attitude, without doubt, is caused by the fact that ordinary cooking methods, and the time-worn experiments of early chemists, show a yield of 15 to 20 per cent for such raw materials as bamboo, cotton stalks, palmetto, bagasse, banana trees and such tropical or semi-tropical plants. Furthermore, they show a high chemical consumption and, at the end, a decidedly inferior grade of pulp, not to be compared in any respect with sulphite or kraft. It has remained for a layman to develop an entirely new method of attack for these materials, a German chemist who, although an outsider in the paper game, is a cellulose technician of many years standing. Looking at the problem of these paper-making materials from an outsider's point of view, he noted a new method of approach which those of us in the industry had not foreseen. It was merely an example of our being so close to the problem and so engrossed with the history of the experiments on these materials that we overlooked this method of attack.

With the plan of attack clearly in view, years have been spent in experimenting and in developing these processes to the point where any fibrous material could be successfully pulped. The American Pulp Corporation was formed to cary on these experiments and to work them out on a commercial basis. An experimental mill was established where complete runs were made with commercial sized equipment, to demonstrate the feasibility of these processes, and their application to commercial practice. The results obtained showed conclusively the far-reaching possibilities for the commercial use of these materials.

The pulp made by these processes will compete with wood pulp under present market conditions, yielding a pulp which compares favorably to sulphite in firmness and formation, and which exceeds it in strength and pliability. The yield is high and the cost of raw materials and cost of production are, of course, very much lower than sulphite.

The materials given special attention were bamboo, bagasse, banana, cotton stalks, palmetto, rice straw and wheat straw. Eucalyptus was also pulped by an analagous method. Wheat straw, of course, is used as a paper-making material today, but only to produce boards and similar sheets. Some of the above materials produce, by these new processes, a pulp suitable for the finest tissues and writings, others are suitable for the production of high-grade wrappings and catalogue papers. The American Pulp Corporation is now engaged in research to determine the value of the stock, notably that from bamboo and cotton stalks, for the manufacture of alpha-cellulose and artificial silk.

The treatment of the raw materials is in every way far less rigorous than by apy present methods. In commercial practice, the cooking is done in a closed vessel under a slight pressure, but never high enough, nor is the chemical action ever severe enough, to cause the destructive breaking-down of the cells and with the resultant loss in yield and quality. The fibers produced by these processes, when viewed under the microscope, show a surprising development. Instead of the fairly straight, unit fiber of wood pulp, or the broken-down fiber of commercial strawboard, the fibers look like a million hands, all clasping and interlocking. Each bundle of fibers carries innumerable tendrils, which are curved and which, when formed on a wire, give a very strong and dense sheet, in some instances surpassing kraft in strength. Another surprising feature of these processes, is that the knots, joints, seeds and pith do not have to be removed, but can be handled with the rest of the material without any cutting or grading. This has always been a great handicap in the utilization of these materials, as the grading out of the knots and so forth, practically placed them out of the realm of commercial feasibility. The writer was engaged in the development of a process for pulping straw several years ago, under the guidance of a very able chemist, but although various approaches were tried, it was always found that the knots remained insoluble and it became necessary to cut these out, together with the seed capsules. By this new method of attack, the knots break down and themselves form a very clean and high-grade pulp.

The company is now engaged in further research upon the spent liquor. Although it is perfectly feasible to recover the chemicals, it now appears that they are of far more value as a commercial fertilizer. Tests have been made on various plants treated with this liquor, showing an increase of 30 per cent in quantity and quality over similar plants not so treated, and these results would indicate an enormous increase in crop if applied to acreage production. This liquor, when sprayed on the plants, seems to effectually protect them from insect pests or borers.

Further work is now being carried on and exceedingly interesting results are indicated in line with the conservation of natural resources and the utilization of materials which are now classified as wastes.

Scaling of Boilers by Softened Water—Method of Prevention*

P. Le Tellier and H. Sunder

IN THE operation of high-pressure, multi-tubular boilers, unless a faily soft well or river water is available scale will form rapidly in the tubes with all its attendant troubles and dangers. The boiler can be fed distilled water from a special distilling plant, or else water which has been softened by the continuous blow-down process; but in most steam plants the water is softened by a more or less efficient cold-softening process with lime and soda ash.

The equipment which is marketed for the application of this softening process generally gives satisfactory results when properly operated, so that with a little care, water with only 4 to 5 French degrees of hardness can easily be obtained without using any great excess of reagents. And under favorable conditions this softened water will give but very little scale even after operating the boiler for quite a long time.

On the other hand, in some cases, the tubes scale rapidly in spite of the greatest care in softening the water; and the purpose of this article is to give the causes of such a failure which, at first sight, seemed paradoxical. Examination of the conditions under which it occurred revealed the causes, and the trouble was easily overcome.

We made the following observation: After completely removing the scale from a boiler with 144 tubes, operating at a pressure of 15 kilos (gauge), and having a heating surface of 250 square meters and containing 18 cubic meters of water, we had been obliged to replace several of the tubes over the crown sheet. The boiler was then started up again and fed water which had been softened by the usual lime-soda ash process. The softness of water was controlled three or four times a day, and the results obtained varied within the following limits:

Hardness	4 to 5° (French)
Caustic Alkalinity	0.5 to 2° (French)
Total Alkalinity	3 to 5° (French)

At the end of a month, during which the boiler evaporated 50 cubic meters of water a day, we wished to see in what condition were the new tubes, and to our great surprise we found a crystalline scale over 1mm. thick, consisting of calcium sulphate which was completely soluble

*Translated from Chimie et Industrie Special Number, 241-243, September 1926, by A. Papineau-Couture.

in cold distilled water. At the time the water in the boiler contained 3.850 g. of sodium sulphate per liter.

It can be admitted that the reverse reaction to that taking place in the softener occurs in the boiler owing to the complete insolubility of the calcium sulphate at the working temperature of the water in the boiler:

$$Na_2SO_4 + CaCO_3 = Na_2CO_3 + CaSO_4.$$

This reaction cannot be considered as reversible, since it is brought about only by the complete insolubility of the calcium sulphate under the conditions prevailing in the boiler. It is certainly due to the action of the sodium sulphate on the small amount of calcium carbonate remaining in solution in the softened water or accidentally carried into the boiler on account of defective filtration. The presence of sodium sulphate must be attributed to the use of a raw water which had a high sulphate content, and consequently a high permanent hardness.

The reactions which actually take place may be much more complicated than the one indicated in the equation given above; for, though the water is slightly alkaline to phenolphthalein, it frequently contains matter in colloidal suspension, which is held on a hardened filter but passes through an ordinary filter. Hence, a water which has been filtered through a hardened filter may show a lower hardness than the same water which has been filtered only through an ordinary filter.

We are not certain as to the nature of this precipitate, which is practically invisible to the naked eye, but which should be readily visible through the ultra-microsope. It is conceivable that it may consist of colloidal lime, for there often remains a slight alkalinity after the carbonates have been precipitated with barium chloride. Or it might possibly consist of gelatinous calcium or calcium-sodium carbonate which reacts with soap solution.

That it is plausible to attribute the formation of the calcium sulphate scale to the use of raw water high in sulphates is borne out by the behavior of a similar group of boilers which were fed with water which had been equally well softened, but in which the raw water contained mostly bicarbonates instead of sulphates. In this second group of boilers after a whole year's operation there was but a negligible, white, pulverulent deposit in the tubes.

Comparative analyses of the two waters gave the following results:

	Raw Water Fed To First Boiler	Second Boiler
Temporary Hardness	23.61° (French)	22.92° (French)
Permanent Hardness	10.18°	1.27°
Total Hardness	33.79°	24.19°
Magnesia Hardness	4.075°	1.991°
100% CaO required (in mg. per 1.)	154.80	139.6
100% Na_2CO_3 required (in mg. per 1.)	107.75	13.44
Chlorides	Trace	Trace

Since there are but traces of chloride, it is evident that the permanent hardness is due chiefly to sulphates. The softened water fed to the first set of boilers theoretically contains 0.1447 g. of sodium sulphate (anhydrous) per liter; while the second contains only 0.0127 g. per liter, or about one-tenth the amount, which explains why no trouble was encountered in the second case.

Possible Methods of Curing the Trouble

Two methods suggested themselves for preventing the formation of the calcium sulphate scale: (1) removal of soluble sulphates by precipitation, for instance as barium sulphate, or (2) precipitation of the lime as insoluble calcium salts before it had a chance to cause trouble.

The first method required the use of barium chloride, which is expensive and which moreover introduces chlorides into the feed water, so that we discarded it.

In carrying out the second method we made use of sodium phosphate, which is relatively cheap, easily obtainable, and which, moreover, need only be used in much smaller quantity. It is added to the water just before feeding to the boiler and gives a white, insoluble, muddy calicum phosphate which shows no tendency to form scale. After operating the boiler under these conditions for many months there was practically no scale. On emptying the boiler the inside of the tubes and shell was found to be coated with a thin layer of a whitish powder which could be washed away.

On the other hand, a considerable amount of mud forms, which must be removed by blowing down the boiler daily; and if it accumulates too fast the boiler must be emptied periodically.

The quantity of sodium phosphate crystals ($Na_2HPO_4.12H_2O$) used was 0, 1 kilos per cubic meter of feed water.

It should be noted that complete elimination of the lime salts is effected only under the action of heat. If the sodium phosphate is added directly in, the softener, instead of giving good results it increases the hardness of the water. It is introduced, for instance, 4 meters below the surface of the decantation tank of a Desrumeaux softener with a capacity of 30 cubic meters of water per hour, at which point it might be expected that the reactions were practically complete, it reverses the softening, doubtless by formation of a soluble calcium acid phosphate, $CaH_4(PO_4)_2$ or of a soluble double phosphate.

The quantity of phosphate to be added in the feed water tank, which must be determined experimently so as to avoid presence of an excess of the reagent in the boiler, does not depend on the amount of sulphates in the raw water, but only on the degree of softening and on the filtration of the water. The phosphate acts only on the residual calcium salts, the quantity of which is practically constant in various raw waters which have been properly softened to about 4 or 5 French degrees of total hardness. Of course, if the softened water is mixed with condensate, the amount of phosphate must be proportionally reduced, and in order to obtain satisfactory results the ratio of softened water to condensate should be kept constant.

The 0.1 kg. of sodium phosphate per cubic meter of feed water, as mentioned above, was determined so as to avoid an excess in the boiler, and as a matter of fact we never found any free caustic soda in the boiler under these conditions. The alkalinity of the water in the boiler is due to sodium carbonate, and its hardness was always 0°.

These observations confirm us in our opinion that the lime is precipitated as tricalcium phosphate, due to the formation of trisodium phosphate. The dissociation of the latter according to the equation

$$Na_3PO_4 + H_2O = Na_2HPO_4 + NaOH$$

does not take place in the boiler. On the contrary, it would seem as though the reaction

$$2Na_2HPO_4 + Na_2CO_3 = 2Na_3PO_4 + H_2O + CO_2$$

takes place at the expense of the sodium carbonate present, a small portion of which is due to a slight excess of the softening reagent. Moreover, if there is no sodium carbonate in the boiler, and especially if the softened water contains mainly alkaline-earth sulphates and but little carbonates, the addition of sodium phosphate may constitute a serious danger to the boiler shell as the water may acquire an acid reaction through the following reactions:

$$3CaCO_3 + 2Na_2HPO_4 = Ca_3(PO_4)_2 + 2Na_2CO_3 + CO_2 + H_2O$$

$$3CaSO_4 + 2Na_2HPO_4 = Ca_3(PO_4)_2 + 2Na_2SO_4 + H_2SO_4$$

Absence of sodium carbonate may also result in incomplete elimination of the lime salts:

$$16CaSO_4 + 12Na_2HPO_4 = 4Ca_3(PO_4)_2 + 4CaHPO_4 + 8NaHSO_4 + 8Na_2SO_4$$

and

$$4CaHPO_4 = Ca_3(PO_4)_2 + CaH_4(PO_4)_2$$

so that

$$16CaSO_4 + 12Na_2HPO_4 = 5Ca_3(PO_4)_2 + CaH_4(PO_4)_2 + 8NaHSO_4 + 8Na_2SO_4$$

insoluble soluble

Close control showed us that, in our case, the alkalinity of the water in the boilers had a tendency to increase steadily.

Applications

The process which has just been described lends itself to a slight modification by means of which the alkalinity of

the water in the boiler can be kept down. This can be done by merely substituting phosphoric acid for part of the sodium phosphate.

The sodium carbonate content of the boiler water, as is well known, should not rise above 0.5 g. per liter, so as to avoid corrosion of the bronze and white metal used in boiler fittings and accessories and also to prevent attack of the gauge glasses.

By adding 0.1 kilo of sodium phosphate and 0.0175 liter of ordinary 45° Baume phosphoric acid per cubic meter of feed water we kept the sodium carbonate content in the boiler practically constant and below 0.5 g. per liter.

This process was also used successfully in internally-fired boilers. It has the advantage of not introducing into the boiler foam-forming substances such as gums, tannins, etc., which are frequently used in boiler compounds in conjunction with compounds such as soda ash, barium chloride, etc., which, when entrained by the steam, can cause trouble in dye works.

Summary

In conclusion, we wish to bring out clearly the fact, which perhaps is being published for the first time, that of two properly softened waters, one with a high sulphate content while the second has not, it is only the latter which will not form a scale in the boiler.

If the boiler temperature is high enough to insolubilize completely the calcium sulphate formed by irreversible reaction of the sodium sulphate on the calcium carbonate remaining in the softened water, the whole of the calcium sulphate will be deposited on the boiler shell and tubes as an adherent, crystalline scale which rapidly builds up to a considerable thickness.

Precipitation of the whole of the residual lime by means of sodium phosphate completely eliminates the crystalline calcium sulphate scale, thereby reducing the number of shutdowns required to clean the boilers without added danger of accidents.

Industrial Applications of Paper Products[1]

This article describes the characteristics, the workability and the applications of paper products to various industrial uses, including resinated paper, hard paper, insulating board, pasteboards, pressed or cast paper products.

The results given in this article were obtained through tests conducted by Dr. Ing. G. Oehler, Laboratory Director at the Technical High School in Dresden.

Characteristics of Paper Products

IN comparison with wood, metals and the ceramic products, paper products still have but little consideration for industrial applications. The reason why paper products have not been used more extensively as an industrial material is their high cost of production and especially their comparatively small firmness. If pure paper is combined with gums, as for example the artificial resin, and placed under heavy pressure, it becomes a product of much greater firmness and resistance.

If a 10-mm. (0.3937 in.) Brinell ball is placed on so-called papier-maché or dried paper pulp with 500 kg. (1102 lbs.) pressure, it often disappears completely in the pulp; whereas well resinated paper products have a Brinell hardness to about 45, which makes them especially suitable for gearings as these require a Brinell hardness of at least 40. The specific weight of the pressed paper products is between 1 and 1.5. The bending resistance of the resinated paper product is about 2000 kg. per sq. cm. (28,447 lbs. per sq. in.).

Tests conducted on such hard papers by the firm Hochvoltisolation (High-voltage-insulation) of Dresden, gave the following figures:

For expansion resistance—
at −20 degrees C. (−4 degrees Fahr.) 1700 kg. per sq. cm. (24,179 lbs. per sq. in.)
at +20 degrees C. (+68 degrees Fahr.) 1500 kg. per sq. cm. (21,335 lbs. per sq. in.)
at 60 degrees C. (140 degrees Fahr.) 1200 kg. per sq. cm. (17,068 lbs. per sq. in.)

For compression resistance—
at 20 degrees C. (68 degrees Fahr.) 3200 kg. per sq. cm. (45,515 lbs. per sq. in.)

For heat resistance—
170 degrees C. (338 degrees Fahr.)

For expansion from—
—10 degrees C. to 60 degrees C. (14 degrees Fahr. to 140 degrees Fahr.)

For the module of elasticity—
120,000 kg. per sq. cm. (1,706,770 lbs. per sq. in.)

Hygroscopically the paper product is inferior; however, hard resinated paper, after having laid 24 hrs. under water, shows an increase in weight of only 0.6 per cent, and after 6 days, of only 2 per cent.

The expansion-tension diagram, Fig. 1, shows that pressed paper breaks at a specific pulling load of 290 kg. per sq. cm. (4,125 lbs. per sq. in.). Resinated paper has a higher value, there being also an elasticity limit, a lower expansion limit and a breaking limit. Not all similar products show the lower expansion limit, as in resinated paper. The area enclosed by the lines of the diagram may be considered as the durability of the paper [dimension, m. kg. per sq. m. (ft. lb. per sq. ft.)]

The best known method for finding the tearing resistance is the weight-actuated pendulum resistance tester or inclination scale.[2] The firmness of the paper is then determined according to the formula R is HK divided by G, in which R is the tearing length in meters (ft.), K the tearing weight in kg. (lb.), G the weight of the tested strip in milligram (in.) and H the length of the tested strip in millimeter (in.).

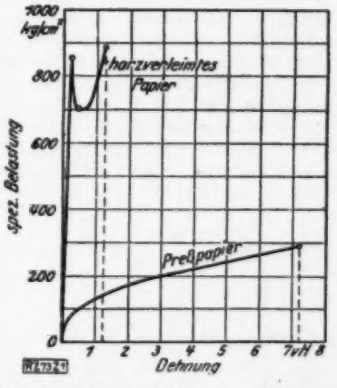


Fig. 1—Expansion-Tension Diagram
Dehnung—expansion in %
spez. Belastung—specific load in kg. per sq. cm.
harzverleimtes Papier—paper limed with resin.
Presspapier—pressed paper.

Polished paperboard or pasteboard as a building material is likely to dry too much, causing easy breakage. It also cleaves easily, especially the white wood pasteboard and the straw pasteboard. If the edge is butted against a hard object, the layers unfold. And if it is exposed to fire, the layers separate while burning. Breakage is facilitated by adding too many weighting materials in manufacturing the paper.

Warping and bending are two big disadvantages in the building pasteboards, which is largely due to defects in manufacture, and partly due to the wrong placing of the layers. Uneven thickness of the pasteboard is bound to produce warping even in the best manufacturing process. Of course, warping is promoted by changes in temperature and by changes in the humidity of the air. Therefore pasteboard should not be set on edge for long periods, especially after having been in damp storage. Hesz recommends that the pasteboard should always be stored flat, in separate piles, on logs with a board underlay at least 30 to 50 cm. (12 to 20 in.) above the floor. The storage room should be airtight but not moldy.

Although pasteboard is spoiled in many cases through unsuitable storage, the rotting is mostly due to bacteria which have somehow entered the pasteboard, resisting temperatures to 120 degrees C. (248 degrees Fahr.). They are

[1] Abstracted and translated from the "Zeitschrift des Vereines Deutscher Ingenieure" of April 23, 1927, pp. 545 to 552, by John H. D. Blanke. Original article by Dr. Ing. G. Oehler, Dresden.

[2] See Rejto, "Anleitung zur Durchfuehrung der Papierpruefung," Budapest; Valenta, "Das Papier," Halle a. S. 1922.

not destroyed in the artificial drying process. The danger is very great when using the air-drying process, as the pasteboard rots during rainy periods. Another disadvantage is the discoloring of the pasteboard, traced back to the tannin in the wood, or the iron oxide in the treating water. In order to make the pasteboard immune against moisture absorption, it should be limed, especially if it is to be painted.

There are five principal kinds of pasteboard; the leather board, the white wood board, the hemp board, the gray board and the straw board. The leather board is very desirable

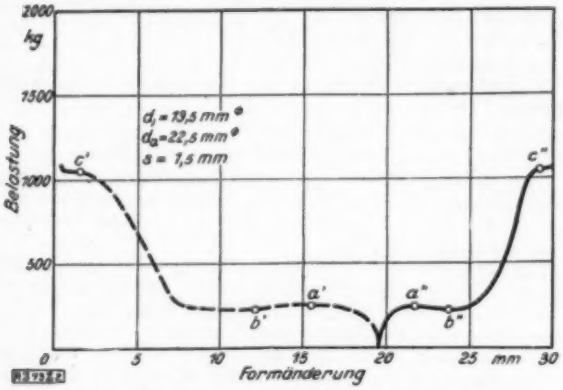


Fig. 2—Tube of 1.5 mm. (0.059055 in.) wall thickness.
Formaenderung—change in shape in mm.
Belastung—load in kg.
di—inside diameter in mm.
da—outside diameter in mm.
s—thickness of wall in mm.

in the cardboard industry and is usually distributed with one side polished. It is used in the production of pasted cardboard and is well suited for tractive use if cellulose and other fibrine is admixed. The hemp board is perhaps the strongest and also used for tractive purposes, as well as for deep-stamping in a matrix board. The gray board is a low-priced product having about the same strength as hemp board. It is used in the manufacture of trunks and books, sometimes also for stamping and drawing purposes and for hard paper ware. The straw board is used foremost as a corrugated

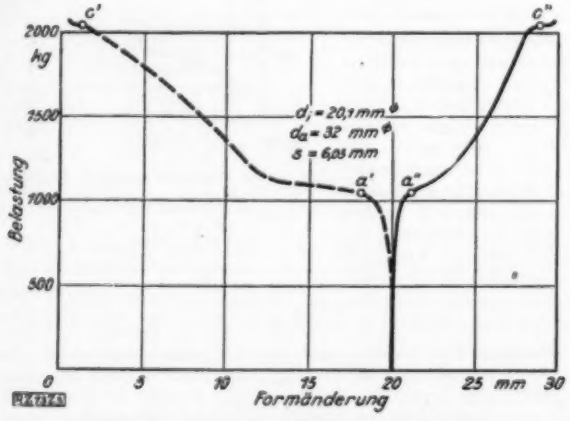


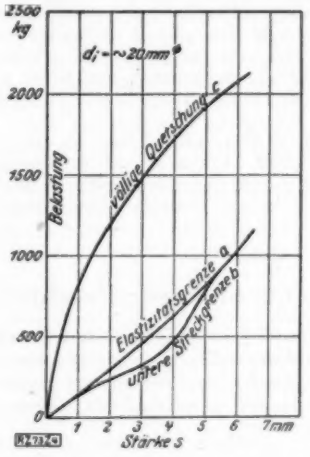
Fig. 3—Tube of 6 mm. (0.23622 in.) wall thickness.
Formaenderung—change in shape in mm.
Belastung—load in kg.

board; unless other fibrine is added, its tearing strength is low.

There is a very great difference between these pasteboard and the resinated hard paper products. The paper sheets limed with artificial resin are much stronger than ordinary board; they are used in the manufacture of various insulating products. Since there is a large demand for insulating tubes of great strength, especially in the electrical industry, the author has made various tests; the results are shown in Figs. 2, 3 and 4. The 200 mm. (7.874 in.) long tubes used in the tests had an inside diameter of 19.5 to 20.4 mm. (0.767715 to 0.803148 in.) and various thicknesses; their full length was placed under pressure.

Fig. 2 shows the results of testing a tube with a wall thickness of 1.5 mm. (0.059055 in.). The solid line shows the increase in the horizontal diameter due to an increase in pressure; and the strcked line shows the decrease in the vertical inside diameter due to an increase in pressure. The resinated paper broke down rapidly. After the load of 220 kg. (485 lbs.) at a' and a" was exceeded, the tube collapsed, without adding a higher pressure, to a pressure of 210 kg. (463 lbs.) at b' and b". Additional weight further pressed the tube flat until the inside walls touched at a load of 1050 kg. (2315 lbs.) at c' and c". Fig 3 shows the test results on a tube having a wall thickness of 6 mm. (0.23622 in.). Fig. 4 gives the results of a number of tests with tubes of various thicknesses, which were all 200 mm. (7.874 in.) long and had an inside diameter of 20 mm. (0.7874 in.). If one considers the points b' and b" in Fig. 2, there can hardly be a lower stretching limit.

The electrical insulating quality of paper is a characteristic especially favorable for its use in the electrical industry. In determining its quality as such an insulating material, its behavior towards electrical breaking through, gliding and tension in the direction of the grain must be particularly observed. In the artificial resin paper sheet both water and



Figs. 2, 3 and 4.
Change in shape of pasteboard insulating tubes due to various loads.

Fig. 4—Test results with pasteboard tubes of various wall thicknesses, BJJ *mm. (7.874 in) length and* BJ *mm. (0.7874 in.) inside diameter.*
Staerke s—wall thickness in mm.
Belastung—load in kg.
untere Streckgrenze b—lower expansion limit b.
Elastizitaetsgrenze a—elasticity limit a.
voellige Quetschung—fully squashed c.

gas must be removed as they make it electrically conductive.

Fig. 5 shows the results of testing hardened artificial resin, pure paper, and insulating plate (Keco-plate) for electrical resistance and breaking strength against the current. Two points were connected to a 220/100,000 volt transformer and laid at a distance of 100 mm. (3.937 in.) on the surface of the testing material. By means of an initial resistance switch the voltage was increased until a light arc appeared which was then just maintained. The duration of the test, the tension and the intensity of the current were recorded. Each test was discontinued when the surface became charred or a conductor developed beneath the surface due to the presence of conducting impurities in cleavages, etc.; this could be noticed by the swelling of the individual layers of paper. Other boards were also tested. A totally unsuitable insulating board showed clearly a charred coal line after exposure to 7 amperes and only 350 volt current for 22 seconds.

The Workability of Paper Products

There is a great difference in working the papers limed with resin and those produced by interliming with casein. Paper limed with artificial resin is handled on the turning

lathe at a higher cutting speed than used for metals. One publication recommends 15 m. (49 ft.) per second, but 10 m. (33 ft.) per second seems to be a favorable maximum speed. The lathe is used more severely, and the angle of the chip remover must be larger than in metal working. On the other hand, the angle of the chisel is about the same so that the back angle becomes also smaller. The slitting of the cutter must not be too slender, otherwise the steel might break. Stellit, which is used in the manufacture of pearls, can not be used, for the intense heat developed would burn the paper. This is different with pearls of casein. Calender rolls are planed in the last working process by means of diamonds. Special turning lathes with exceedingly small forward motion are necessary, and the job requires several days.

In drilling resinated paper, spiral drills are used for a diameter to 20 mm. (0.7874 in.) and steel head drills with drilling rod for larger diameters. Center drills can not be used. The drills must be kept very sharp. Cooling liquids are not recommended even if the drills become hot.

Paper limed with artificial resin may be cut with high speed steel cutters of natural hardness, having teeth about 3 mm. (0.11811 in.) high and a spacing of 6 to 7 mm. (0.23622 to 0.27559 in.). In cylindrical cutters the spiral pitch of the teeth should be rather high. Breaking grooves for the chips are unnecessary. On the average the speed is the same as in metal working. These facts apply to other types of cutters as well.

In sawing, a speed of 10 m. (33 ft.) per second is recommended. For higher speeds the saws should be quite obtuse. A spacing of the teeth of 2 to 2.5 mm. (0.07874 to 0.098425 in.) is favorable. Circular saws are used for paper to 1 cm. (0.3937 in.) in thickness; band saws are more suitable for heavier board. It is very important that the saw blades are kept sharp. Experts recommend that resinated paper be kept for 15 minutes in water of about 95 degrees C. (203 degrees Fahr.) before sawing.

The resinated paper is planed with glass paper laid on wood discs at a cutting speed of about 7 m. (23 ft.) per second. A starting speed of 2 m. (6.6 ft.) per second is recommended and a glass paper which is not too hard and coarse. Polishing is done best with flabby discs and glossing with wool and flannel discs, at a speed of 10 m. (33 ft.) per second. The trade offers also various polishes or polishing pastes. For matting, a pumice flour is used.

The stamping of the paper is difficult, as it must be pre-

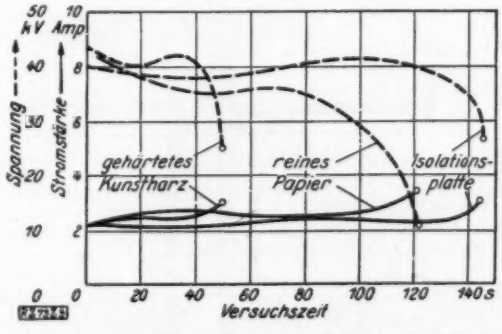


Fig. 5—Test results on various insulating materials for resistance and breaking through.
Versuchzeit—testing period in seconds.
Spanung—tension in kv.
Stromstaerke—current strength in amperes.
gehaertes Kunstharz—hardened artificial resin.
reines Papier—pure paper.
Isolationsplatte—insulating board.

warmed and then left in the die for cooling; not all paper products are suitable. Punching and drawing of paper products is also very difficult, and thicknesses over 5 mm. (0.19685 in.) can not be used. The drawing into box-shaped round bodies still seems to be an unsolved problem. The tubes are finished with angle mandrels. Various expert motions are required for this exceedingly difficult job.

Whereas the resinated paper requires sharp well-hardened tools and a cutting speed slightly higher than in machine steel, especially in drilling; the conditions are much different when working the non-resinated paper boards. Where chips are produced as in turning, cutting, planing, drilling and sawing the paper board, great care must be taken to prevent peeling and breaking off and that it is worked and pressed

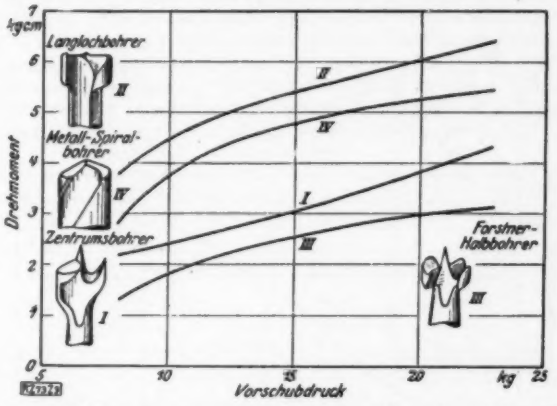


Fig. 6—Change in moment of rotation with various types of drills and changing pressure.
Vorschubdruck—pressure on drill in kg.
Drehmoment—moment of rotation in kgcm.
Longlochbohrer—long hole drill, II.
Metall-Spiral-bohrer—metal spiral drill, IV.
Zentrumsbohrer—centre drill, I.
Forstner Halbbohrer—Forstner semi-drill, III.

down along with the tool. Due to the comparatively uneven working surface thus produced, other working methods are necessary. A hole drilled with a 5 mm. (0.19685 in.) drill may be larger or smaller; the job can be completed quite satisfactorily by using a planer or press which punches through the drilled hole. The saws and drills need not be

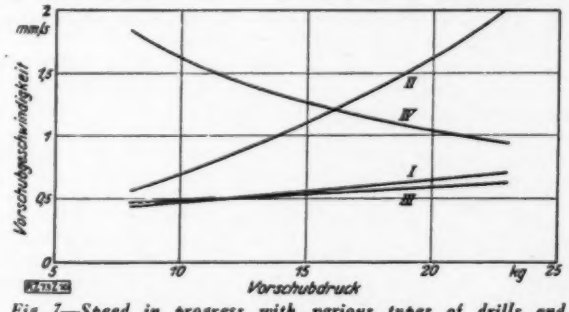


Fig. 7—Speed in progress with various types of drills and changing pressure in progress of the drill.
Vorschubgeschwindigkeit—speed in progressing in Vorschubdruck—pressure in progressing in kg.
per sec. I, II, III, and IV as in fig. 6.

overly sharp, but the turning and cutting tools must be sharp.

The writer conducted drilling tests on layers of good wood product having a Brinell hardness of 8 and having the expansion curve shown in Fig. 1. The results are shown in Figs. 6, 7 and 8. First an average drilling speed of 160 r.p.m. corresponding to a spindle speed of 3440 r.p.m. was selected. A centre drill, a long hole drill, a Forstner type drill with two round side cutters and a spiral drill for metal as shown in Fig. 6, all 15 mm. (0.59055 in.) in diameter, were used. The tests were taken on a test stand for wood drills at the Technical High School in Dresden and the progress in drilling was controlled by weights.

The transport resistance of about 2 kg. (4.4092 lbs.) was considered in finding the results. The Forstner type drill was the most favorable and the long hole drill the most unfavorable in respect to power requirement. The drilling with a jerky metal spiral drill was not so favorable as that of the long hole drill and the Forstner type drill. The holes made by the long hole drill had the smoothest sides; the holes made by the centre and the spiral drills were not so clean.

Exceedingly interesting are the results with the different

types of drills as shown in Fig. 7, of the speed in drilling progress in relation to the power in drilling progress. This shows that with a pressure in drilling progress of 16 kg. (35 lbs.), metal drills may be used to advantage, and for higher pressures the long hole drill is preferable. The other two drills which gave better expectations in Fig. 6, will probably have to be excluded from the working of paper products according to the results in Fig. 7.

Fig. 8 shows the results of the behavior of the speed of drilling progress during variation in the r. p. m. of the drill spindle relative to the cutting speed of the 15 mm. (0.59055 in.) long hole drill mentioned above. The spindle drill speed

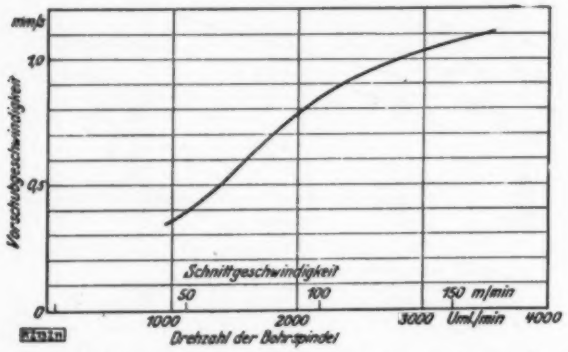


Fig. 8—Relation of the speed of progressing to the speed of cutting.
Drehzahl der Bohrspindel—speed of drill spindle in r.p.m.
Schnittgeschwindigkeit—cutting speed in m. per min.
Vorschubgeschwindigkeit—speed in advance of drill in mm. per sec.

was varied between 2000 and 4550 r. p. m., corresponding to a cutting speed of about 100 to 250 m. (328 to 820 ft.) per min. The speed of drilling progress increases very favorably, showing that the higher speeds are preferable.

Greater care must be given those paper working jobs which produce no chips—the cutting, stamping and drawing known in the cardboard industry. The paper is punched or drilled by means of a simply constructed punching tool, made of plywood or perhaps harder parts between which is a rubber inlay and a suitably bent steel strip with a sideways-cutting edge. Stamping is done best by means of a hot die. Before bending it, the paper must be laid in boiling water. The period of heating lasts up to ½ hr., depending on the size of the sheet. Unevenly heated or underheated parts break in bending. The bent parts are pressed solid in iron forms where they are left for cooling.

Of most importance in working paper products seems to be the drawing or pulling process in which the cardboard receives a solid form which offers the necessary resistance for the exterior mechanical requirements in the armature covers used in the electrical industry and for the packing of products of every kind. Adherence to the permitted drawing limit is very important.

The correct treatment with soaps can increase the expansion of the drawing pasteboard as much as 40 per cent. The success of the drawing work depends a great deal on the rounding off of the shape of the drawing tools, that is, of the matrixes and patrixes. (The writer then presents an extensive formula for determining the sizes of a board from the three-dimensional expansion diagram with the surfaces of the same drawing diameter, including a graphic representation of various matrix drawing-shapes and roundings for the development of desirable construction forms.)

The Uses of Paper Products

Paper may be used throughout industry in a multitude of ways. The necessary strength could be attained without practical trouble by the aid of high pressures. Whether such a process is economical, remains to be seen. The costs of the solidifying plant increase in much greater measure than in the relation to the increase in strength thus attained. Experiments are said to have been made to make railroad rails in this manner; the writer does not know whether the contemplated plant was ever completed. Railroad wheels of paper product have been used with good results. The outer band is of steel and in fitting on is turned somewhat conical on the inside so that the inside diameter at the flange is 8 mm. (0.31496 in.) less than the outside diameter. The hydraulic pressure for solidifying the paper product is 200 metric ton (2.205 short ton) in this case; the block is turned on a lathe after having dried a certain period.

The manufacture of belt discs from paper products is an American invention. Its success is due to the better grip, and the slipping thus prevented. Cogwheels made of paper product to assure silent operation, consist of layers of paper sheets which are, as a rule, limed. The two sides are covered with sheet plate. Then the body is drilled, held together by a shaft or rivet, and is then cut after being placed on a mandrel. The two sheet plate covers do not engage with the other cogwheel but are merely used to hold the layers of paper together, and to prevent a side motion of the layers. The modern construction of paper cogwheels is so well advanced that they can be pressed into various profiles. The paper is not applied smoothly, but in a manner similar to ball paper. This increases the specific surface area and assures a greater liming surface and better adhesion.

Furthermore, paper products are used for insulation of electricity, heat, cold and noise. The building industry has taken advantage of these insulating qualities and uses paper tile pressed into any desirable shape. The tile is dried after the pressing and hardened with a waterproof solution. The surfaces of the tile are partly covered with a fire-protecting solution. Pasteboard tile has not proved very satisfactory and is not much used today. Perhaps their comparatively high production cost is an obstacle. In itself, the pasteboard tile is a very light material for compartment walls which saves also in foundation walls and ceiling supports.

Another use of paper in the building industry is that of paper stucco which, taking the place of plaster of Paris, is

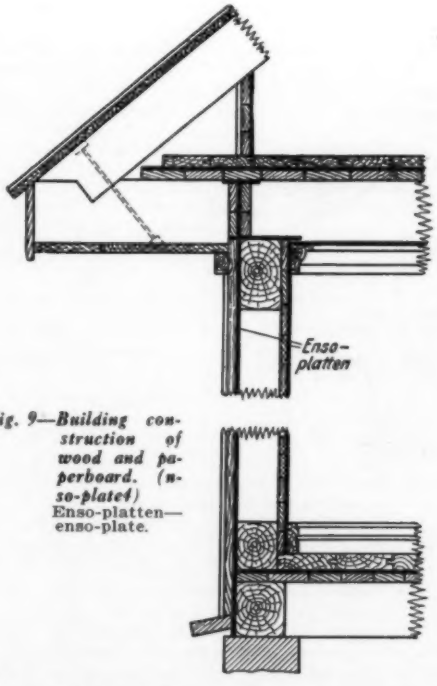


Fig. 9—Building construction of wood and paperboard. (enso-plated)
Enso-platten—enso-plate.

very light, easily attached, easily decorated and gilded, so that it is finding a large number of enthusiasts.

Floor and wall covering of paper product is also very desirable. The pasteboard sheets are today an indispensable building material in the modern wood-house industry. The houses

built with pasteboard sheet (Enso-platten), as shown in Fig. 9, assure a good heat insulation. The board must be fastened to evenly-cut timber to prevent warping and it must not be applied until the woodwork and mortar is completely dry. In walls which are exposed to excessive moisture, the backside of the pasteboard is surfaced with tar, Preolit or Isolat, or an asphalt paper may be placed on the damp wall.

In America, cupolas on various buildings are partly built of paper, in which the paperboard is laid in strips, narrowing from bottom to top. Several paper strips are laid on each other and then limed. These cupolas are exceedingly hard and resistant, especially after they have been made weatherproof.

Tubing made of paper products can be used not only for electrical insulation, but also for gas and water-pipe lines. It is wound and then made waterproof and resistant through various processes. It becomes thus quite expensive and, therefore, is not very much in use.

Mention must be made of the products which can be made of ground wood. After the resin has been extracted from the wood pulp, it is pressed into the desired shapes under great hydraulic pressure. The products thus formed which have a very even solidity, are saturated with resin and oil, and hardened in heat. The objects are then covered with varnish which is burned in under a high temperature. This process makes the products, and especially these pressed ones, resisting against the influences of hot water, sodas and lye solutions. The dilatability of the material in its use is comparatively great. The wood product has, of course, no great compression resistance, but a considerable durability; it is, therefore, much used in the making of household ware.

Finally, the casting of pasteboard should be mentioned, a process which has lately been used increasingly in foreign countries. The invention of this process is of German origin. A thin cellulose pulp is pressed into a multi-section form where it distributes evenly because of the high pressure. During the drying period the moisture is expelled through the fine pore-like openings of the form. The cast pasteboard product thus obtained has, therefore, a rough surface. The process is comparatively expensive but has been introduced into certain industries.

As a building material the paper product is still comparatively little used, but its possibilities of application are so numerous and varied that one is justified in believing in its extensive use in industrial applications, not as an inferior substitute, but as a high-grade valuable construction material.

(The great possibilities offered in the application of paper products urge further study and experimentation. New applications need be found, paper products must be developed and perfected, their characteristics improved to meet the latest requirements and the manufacturing processes cheapened.—Editor.)

Foster Wheeler Corporation

Recent announcement has been made of the consolidation of the Power Specialty Co., and the Wheeler Condenser and Engineering Co. These two concerns have been producing apparatus for the past 25 years and are pioneers in many new engineering developments.

The assets, plants, engineering, research, sales departments and subsidiaries of both companies will be assembled under one corporate identity to be known as the Foster Wheeler Corp.

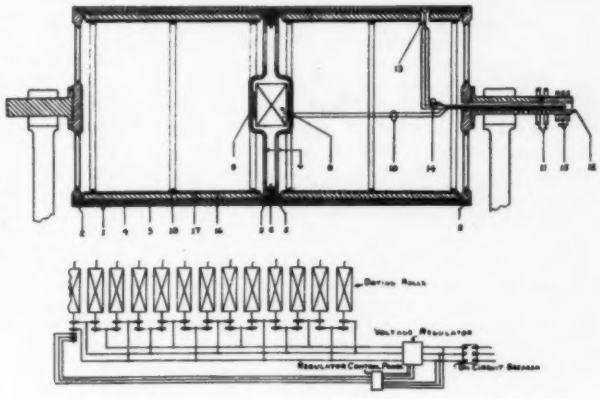
No change in management will be made. The new officers will be those of the old companies, as follows: J. J. Brown, chairman of the board of directors; Pell W. Foster, vice-chairman and treasurer; L. B. Nutting, president; John Primrose, vice president; H. S. Brown, vice president; W. E. Dowd, Jr., vice president; David McCulloch, secretary and general manager, and W. F. Keenan, Jr., chief engineer. The new corporation will have no securities prior to 35,000 shares of preferred stock and 194,000 shares of no par value common stock. The combined assets are approximately $12,000,000.00.

P. I. Perkins Co., 110 High St., Boston, Mass., will represent the Pennsylvania Pump & Compressor Co., of Easton, Pa., in the Boston territory.

New Electric Paper Dryer

A new electric paper drying system will shortly be tried out in one of the larger paper manufacturing plants. The invention of an engineer connected with the National Electric Heating Company of Boston, the new method is said to have many advantages over existing systems of heating paper machine drying drums electrically. For one thing, it can be applied to existing steam-heated drums by suitable alterations and additions, and as the heat is generated in the outer surface of the drum, temperature changes can be effected almost instantaneously, while the heating current is always under perfect control. Indeed, simplicity of control is a feature which is stressed by the makers.

By means of an induction voltage regulator, the heating current may be controlled at will. A motor generator set actuated by a thermostatic device located near the dry end



of the paper machine may also be used to vary the voltage of the circuit supplying the dryer drums. Means are also provided to prevent overheating of the drums in the event of accident to the heating-current-regulating device, or in case the sheet breaks, or the machine stops for any cause.

In order to be adaptable for application to drums formerly heated with steam, the construction of an electrical dryer must be comparatively simple, a requirement which seems to be met by the electric heating method under consideration, which provides an easily controlled means of heating, with the heat distribution capable of being maintained uniformly at any desired temperature, any variation in heat not exceeding 2° Fahr., plus or minus.

The construction of the drying roll or drum is substantially as shown in the accompanying sketch.

The outer surface of the dryer (1) composed of high-resistance, non-corrosive metal is the heating element. An inner supporting shell of low-resistance metal (3) is connected at (2), and insulated at (4). Flanges or connection rings (5) are provided at the inner ends of shell (3). The flanges are insulated from each other, but connected mechanically by means of insulated bolts. Attached to the connection rings are spider frames (7) for the support of transformer (8) and as a means of conducting current from transformer secondary (9) to the low-resistance inner shells (3) and high-resistance heating element (1). Transformer (8), mounted within the drying drum and rotating with it, may have primary winding of any desired voltage or frequency; it is connected by primary leads (10) to collector rings (11), mounted on hollow shaft (12). Located in direct contact with the inner surface of heating element (1) and connected by leads (14) to collector rings (15) is a quick-acting thermostatic temperature controlling device (13).

At (11) and (15) in the sketch are collector rings provided with the usual brush rigging connected to a suitable source of regulated power and its control circuit.

Working temperature is attained quickly, in approximately five minutes, which compares favorably with the time taken ordinarily by steam-heated rolls to generate sufficient heat for drying paper; it is asserted that the entire surface of the

dryer drum is heated uniformly without the possibility of hot or cool spots.

This new electrical heating method is said to be more economical in operation than steam, considering the ordinary cost of electrical power in paper mills, as there is an almost complete utilization of current.

The heating element, which forms the outer surface of the dryer, is practically indestructible, with no tendency to corrosion, and as a low voltage is used in the heating circuit, there is no fire hazard.

In drying glassine and engine-sized papers that require higher temperatures than can be obtained with low pressure steam, the electrically heated drum is said to be notably efficient. Being generated at the drying surface, the heat is under good control and, if required, a definite amount of moisture can be left in the finished product. This is accounted one of the special advantages of the electric dryer over steam-heated drums, the surface temperature of which depends on such variables as steam pressure, amount of moisture in the steam, water, dirt and scale films on the inside surface of a drum, variation of speed, vacuum, and the operation of traps and other condensate-removing apparatus, which cause fluctuations in the degree of heat at the drying drum surface.

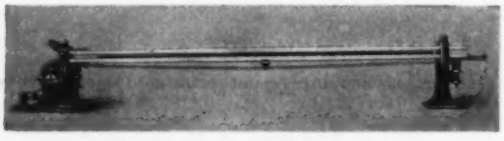
Because the surface of electrically heated drums can be maintained continuously at the maximum operating temperature, with a rapid transfer of heat at the point of contact with drum and paper, fewer drying drums can be used as compared with steam-heated drums. In this way, radiation losses may be kept down, with a consequent reduction in the expense of dryer felts, and a lessened liability to breaks in the sheet.

There being no internal pressure or stresses, as in steam-heated drums, electric dryers can be of light-weight construction and built in any desired diameter. A Yankee machine equipped for electrical drying is now under contract.

Other factors contributing to lessened cost of electric dryers as compared with steam dryers include reduced power equipment, fewer drums being required; elimination of steam and water control equipment and water fittings for removal of condensate, besides savings in cost of bearings and machine framing.

The Alexander-Youngchild Wire Cleaner

Under modern operating conditions, any new mechanical device which helps to keep the paper machine running as nearly continuous as possible is worthy of special note and comment. In a paper read by F. K. Becker at the annual meeting of the Superintendents' Association in Richmond, Va., this year, the Alexander-Youngchild Wire Cleaner, as manufactured by Bird Machine Company, South Walpole, Mass., was described. This mechanism, which consists of two narrow brushes so placed as to extend across the wire at some

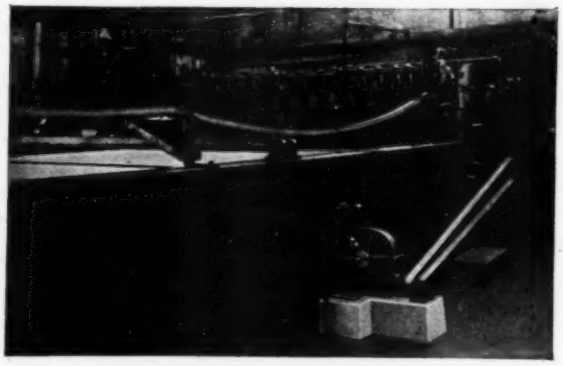


Full view of the Wire Cleaner

convenient point on its return run, as shown in the accompanying illustrations, operates automatically to keep the paper machine wire well scrubbed and free from the pitch, grit and other foreign matter that are apt to accumulate on the wire. The entire width of the wire is kept constantly scrubbed by the brushes as they oscillate continuously in opposite directions.

The inventor of this wire cleaner, C. E. Youngchild, is a papermaker with twenty-seven years of experience behind him, who had frequently seen paper machines shut down for the purpose of scrubbing spots off the wire. The interruption to production caused in this way meant a great loss of time and money, hence he considered that if a device could be built by which the wire might be cleaned automatically without shutting down the paper machine, the increased production and reduced overhead would result in the saving of thousands of dollars. He tried out his invention at the mill of the Nekoosa-Edwards Paper Company on a Yankee machine making machine-glazed paper which always gave trouble from dirt in the stock. After running a few hours the wire would become so spotted with shives, pitch and grease that it was difficult to clean it, even with wire brushes soaked with kerosene and gasoline. After putting on the automatic cleaner, the machine could be run on the same grade of paper for three or four days at a time without stopping to clean the wire.

It is pointed out that the life of a wire is lengthened by the use of a wire cleaner of this kind; for, as every paper-



Wire Cleaner installed on a paper machine

maker knows, the grit which accumulates on a fourdrinier wire in the papermaking process increases the abrasive action of rolls and suction boxes on it. By keeping the meshes of the wire entirely free of grit, the wire cleaner reduces this abrasive action very materially and at the same time lessens the chance for the wire stiffening and cracking as it passes over rolls and suction boxes.

An additional saving of considerable importance effected by the Alexander-Youngchild Wire Cleaner is in the volume of shower water needed on the wire. The use of the wire cleaner eliminates the large percentage of the water needed, which means a considerable saving in operation and a material reduction in white water losses because of the smaller amount of stock carried away in the wash water and because it is possible to employ white water in what few shower pipes are needed.

A Steam Distributor and Extracting Device.

Papermakers, who know well and favorably the various series and valuable contributions of the Fulton Engineering Co., Middleton, O., to the solution of the problem of drying paper on the paper machine, are becoming interested in the latest development of the Fulton organization.

This development proposes to attack in detail three of the most pressing paper machine drying problems, namely, the efficient removal of the condensate where rim speeds are high; the efficient removal of air and gases especially where rim speed is high; and finally the uniform heating of the shell under the handicap, imposed by the paper machine design, of being able to admit the steam from only one side of the dryers.

The accompanying diagram shows the apparatus newly designed by the Fulton Engineering Co., and covered by various United States and Canadian patents granted, and foreign patents pending. A typical paper machine dryer is depicted. Entering this dryer from the usual "back side" or drive side is an arrangement of piping. This arrangement of piping is supported by a bearing in the front journal and by the steam packing box on the drive side of the machine. The piping remains stationary while the dryer revolves around it.

This special pipe is of aluminum. This permits of the

welding of all joints by electric or gas process so that there is no danger of any part, especially those inside the dryer, becoming loose or disconnected. The design of the pipe arrangement gives the exact right thickness for the diameter of the pipe and the work it has to do, and this, combined with the fact that the material is aluminum, insures that the weight of the whole arrangement is very slight.

This special pipe combines in itself the condensate and air removal syphon pipe, and the steam distribution pipe which also supports the syphon proper. The points about the arrangement which are unique are these: the steam distribution pipe and also the main syphon pipe run the entire length of the dryer across the width of the paper machine; there are leads from the syphon pipe with specially designed condensate and air collecting scoops at the end, running to the shell at intervals across the width of the machine; and there is a special valve arrangement running from the outside of the dryer on the back side or drive side which controls the amount of steam issuing at various points from the steam distribution pipe.

The apparatus described above attacks the three problems outlined in the introductory paragraph on the following pages. This description is based on the theories advanced, and the claims made by the Fulton Engineering Co.

Common Methods of Condensate Removal.

Since the development of large high speed paper machines, the problem of dryer condensate removal has been complicated by the increase in rim speed of the dryers. This increase in rim speed, especially at nine hundred feet per minute or more, creates a condition in which the condensate, instead of collecting in the bottom of the dryer, as at slower speeds, forms a film and rotates with the dryers.

There have been in the past, two generally used methods for reaching this water and starting it on its way out of the dryers. One is the single pipe syphon and the other is the bucket or dipper.

At high speeds, the syphon type confronts the problem of inducing the thin film of water, touched only at one point at the bottom of the dryer by the syphon pipe, to change its direction of flow. This change of flow demanded by the single pipe syphon amounts to ninety degrees, and with the film of water rotating with the dryer, the depth to which the end of the pipe is immersed in the water is very slight.

The operation of the bucket or dipper type of water removal device depends on gravity. (This involves inducing the flow of water from all points in the dryer to the back side where the dipper is located, a matter increasingly difficult of achievement with the increase of the width of the machines.) Furthermore, the same force which creates the film along the dryer shell would tend to overcome the force of gravity on which the dipper device depends to run the water out of the dipper to the outside of the machine.

Operation of the Reflex Syphon.

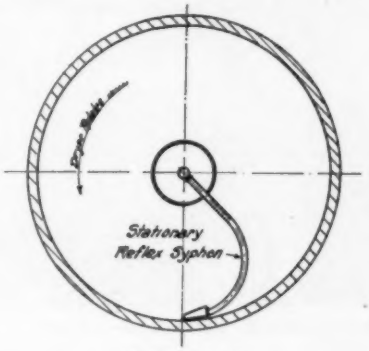
The principle obtaining in the watering of a steam engine when in motion, was applied in the design of the Fulton Engineering Co., of the Reflex syphon. In the case of the steam engine the scooping device on the engine is, of course, in motion, and it gathers in the stationary water tank between the tracks. In the reflex syphon, the syphon scoop is stationary and the water rotating with the dryer rim forces itself into the syphon scoop and so to the outside of the dryer. It is claimed for this device that the water would of its own momentum flow out through the syphon pipe. It is intended, however, that the pressure on the header into which the syphon discharges be lower than that in the dryer, and this pressure differential will aid in the efficient removal of the condensate.

The Reflex syphon arrangement is furthermore arranged so that the condensate may be removed at as many places along the length of the dryer or across the width of the machine as may be desired.

Steam Distribution Tube.

The arrangement of the steam distribution pipe which supports the Reflex syphon attacks the next problem, that of heating the dryer shell in a uniform manner. As paper machines increase in width and hence dryers in length, it becomes less and less probable that steam admitted at the back end—or drive side—of the dryers will heat uniformly parts of the dryer shell twenty feet away.

To counteract tendencies for the shell to heat irregularly, the steam distributing tube is designed to permit the steam to be released at different points along the length of the dryer or across the width of the machine. Moreover, the arrangement is such that more steam may be released at one point than at another. This is done by means of the external distributing valve adjuster. It is a well known fact that where all other factors are equal, some paper machines deliver the paper dryer at the back side than on the front and others run to the reverse condition. The external distributing valve adjuster permits of the correction of this condition and insures a more evenly dried sheet. It is felt, furthermore, that the steam distributing tube will permit



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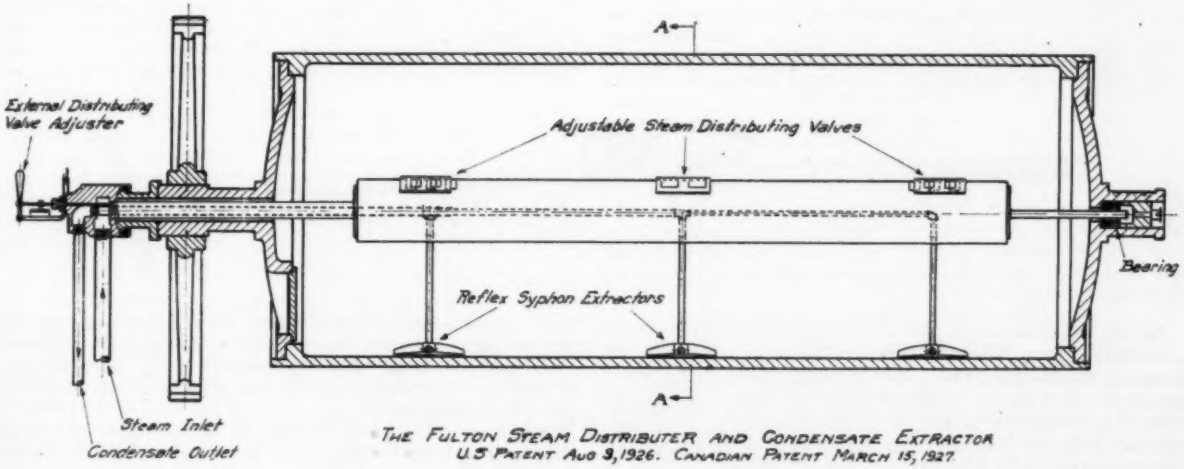


THE FULTON STEAM DISTRIBUTER AND CONDENSATE EXTRACTOR
U.S PATENT AUG 3, 1926. CANADIAN PATENT MARCH 15, 1927

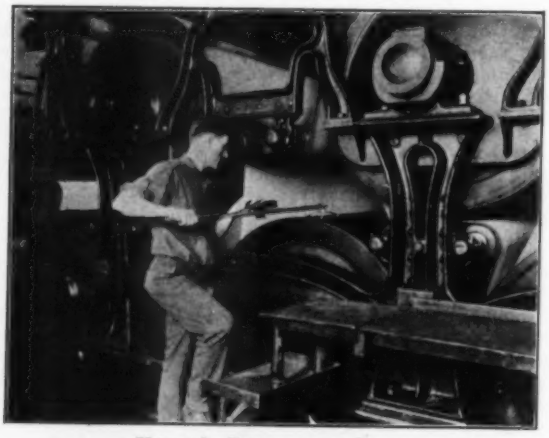
of the correction of wet streaks and such irregularities in the drying, by heating some or all of the dryer shells at points where the wet streak is touching and so secure more even drying.

The Fulton Engineering Co., feels that the inclusion of this new device in the regular Fulton system will provide an additional aid to the elimination of air bound dryers. It is pointed out that there is provided on every steam radiator, in addition to the usual inlet valve and outlet pipe, an air vent. If this air vent does not function, the radiator becomes air bound, the steam does not circulate and the surface of the radiator is cold. This condition often occurs in the paper machine dryer and it is the further purpose of the combined steam distributing tube and Reflex syphon to insure the removal of air and uncondensable gases from the dryer so that the steam may condense properly and the water of condensation be removed continuously.

The Fulton Engineering Co. has attacked three major problems of paper drying on the paper machine in an interesting way with the combination of equipment described above.

Taking Temperature of Curved Surfaces

A convenient means of measuring the surface temperature of calender rolls, steam heated dryers, or other convex surfaces, is provided by a new instrument manufactured by the Cambridge Instrument Company, New York. The device, which is known as "The Cambridge Surface Pyrometer," can also be adapted to the measurement of the temperature of flat or slightly concave surfaces, by means of a special attachment.



Using the Pyrometer on Dryers

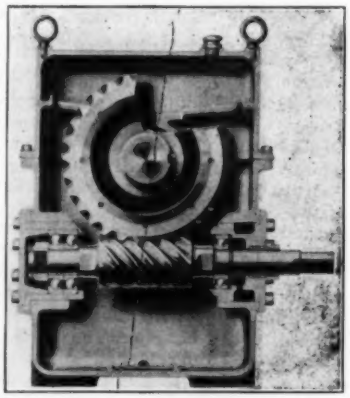
In the accompanying illustration the method of taking the temperature of paper dryers is shown. An extension model is used for determining temperatures on parts like dryers not accessible to the hand-model instrument. The standard length of the extension rod for use in ascertaining the temperatures of parts inaccessible to the hand instrument is 4 ft. is not necessary to stop the calenders or dryers in using the instrument. The surface temperature of dryers can be read quickly by means of the Cambridge surface pyrometer. The standard range is from 50 to 400 degrees Fahrenheit, but other special ranges may be provided.

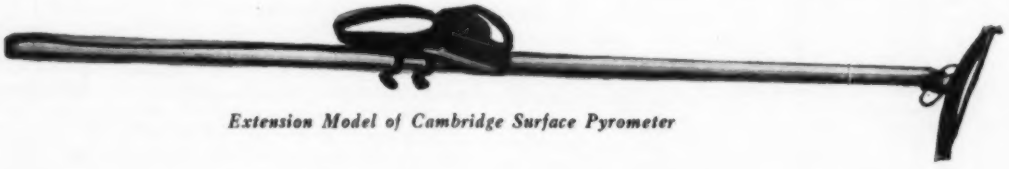
When it is considered how important an item is the cost of steam in paper production the value of this instrument as a means of controlling both steam consumption and efficiency of drying may be appreciated. Descriptive literature of the two models, hand and extension, as well as of the surface adaptors, a special instrument, can be obtained on request to Cambridge Instrument Company, Inc., Grand Central Terminal, New York.

Worm Reduction Gear for Heavy Duty Drives

Worm gear speed reducers have been known to engineers for many years, but the early examples of such gears were not suitable for continuous heavy duty or high speed service, as the tooth shape did not provide sufficient effective area of contact, and the materials which were used were not generally those best suited for the purpose. Such gears were successful only where the pitch line velocity was low, the duty light and intermittent, and efficiency of little importance. Recently, however, reliable and highly efficient worm gearing has been developed, particularly for automotive application, combining noiseless running, high efficiency, compact construction, and reliability under the most adverse conditions, and such gears are now available for industrial drives.

The De Laval Worm Reduction Gear shown herewith differs from the older forms in general design and in the tooth shape used, and in the materials employed. The tooth shape is such as to combine a minimum of sliding and a maximum of rolling action between the worm and the gear, and at the same time to realize continuously the greatest possible area of contact. The included angle of the tooth is approximately 60° as compared with about 30° in the older types, so that undercutting is entirely avoided. The tooth form is exceptionally strong, as failure would have to take place by crushing ing rather than bending, since the pressure line normal to the face of the pitch circle falls within the base of the tooth. Three or more teeth are always in contact, giving exceptionally high load capacity for the size and weight. These gears are designed to transmit power continuously at either high or low speed and perform satisfactorily over long periods with little or no maintenance cost. The entire reduction is enclosed in a casing which completely protects it from dust and moisture, and its simplicity and compactness permits of its being installed in many places where other gearing could not be used. The efficiency is high, often reaching 97 per cent for certain ratios, and is maintained throughout the life of the gear.





Extension Model of Cambridge Surface Pyrometer

In the construction of the Cambridge surface pyrometer a sensitive, thin, flat-strip thermo-couple is used, with the junction at its mid-point. The thermo-couple is stretched across the ends of an inverted bow spring fixed to the underside of a metal casting and its ends connected to a millivoltmeter. Temperature conditions are obtained by pressing the thermo-couple strip into contact with the heated surface. It

These gears are made for transformation ratios of approximately 4 to 1, up to 100 to 1, in one step, and for any higher

ratio in double reductions up to 8000 to 1, and for capacities up to 500 h.p. They are made with the worm either above or below the worm wheel, and for right or left hand drive. The right angle drive frequently permits placing the motor out of the way so that it does not obstruct aisle space or interfere with getting at the driven machine. De Laval horizontal drive gears have been extensively employed in paper mills for driving stock chests and for transmitting power from turbines or motors to paper machine line shafts.

For digester tanks and similar machinery a vertical worm gear is built, avoiding the need for bevelled gears or vertical belts. As in the case of the horizontal gear, the substantial cast-iron casing serves as an oil reservoir, and an oil pump incorporated in the cover lifts the oil from the reservoir to the upper bearing. One of the working members dips in the oil, providing splash lubrication, except in high power, high speed units where the wheel tooth and worm thread surfaces also have forced feed lubrication. Circulation of oil to the lower wheel shaft bearing and thrust plate is insured by a spiral oil groove. Vertical drive frames are made with the wheel shaft brought out either at the top or at the bottom.

Features of the Graphic Arts Exposition

The time is rapidly approaching for the Graphic Arts Exposition to be held in Grand Central Palace, New York City, Sept. 5-17, 1927. The Exposition opening Labor Day, promises to guests of the trade, invited guests, and foreign visitors, much in the way of instructive and entertaining features.

Since the announcement of the Graphic Arts gallery at the show, a display to be made up of complete departments and special groups of all the arts concerned in modern printing, has been highly commended. Visitors here will find fine books and book bindings revealing the highest attainments in typography, design, illustration and craftsmanship. Many of the rare books will be exhibited in glass cases.

From England two dozen printer-delegates will attend the annual U. T. A. Convention, and see the exposition as well during their stay. Following this they will make a three weeks' trip to various American cities, visiting leading printing establishments and places of interest.

Another interesting announcement comes from the American Society of Mechanical Engineers, telling of the national meeting luncheon to be held at the Commodore Hotel on September 14, the subject of the meeting to be "Engineering in Graphic Arts," and a cordial invitation has been extended to all interested in graphic arts, by William C. Glass, Chairman of the Printing Machinery Division. We learn also that the co-operation of the Metropolitan Museum of Art, New York, has been obtained in the preparation of feature exhibits.

Two floors of the Exposition will be devoted to displays of machinery and equipment, and the third floor will contain internationally representative examples of attainments in illustration, fine printing, papers, lithography, engraving, ink displays and printers' exhibits. Among the interesting exhibits entered recently for the show is that of the International Press Exhibition to be held in Cologne, Germany, in 1928. Its sponsors plan to glean many ideas at the New York event, and to get in close touch with the various allied industries in America at that time.

The Grand Central Palace, home of the Graphic Arts Exposition, is centrally located to all the new cinema theatres, hotels, as well as the Fifth Avenue shopping center, and this exposition, together with the large number of important meetings, conventions, etc., to be held at the same time, promise to bring together the largest attendance ever reached by any similar event in the country.

L. M. Alexander, president of Nekoosa-Edwards Paper Company, Port Edwards, Wis., was a welcome guest at the Chemists' Club on one of the days of his stay in New York while awaiting the arrival of his brother on the "Mauretania." He made an interested tour of the building and expressed his admiration of the library, which represents perhaps the most complete collection of chemical and related books in the United States.

Summer Meeting of Paperboard Industries

The summer meeting of the Paperboard Industries Association was held at the Westchester Biltmore Country Club, Rye, N. Y., July 20 and 21st, with a fine attendance. J. P. Brunt, Container Corporation of America, presided at the General Meeting of the three groups, and also at the meeting of the Container Group. H. S. Hinkel, of the National Folding Box Co., presided at the Folding Box Group Wednesday, July 20th. W. J. Alford, Jr., of the Continental Paper Co., presided at the Paperboard group meeting.

Paperboard Group Meeting

George W. Gair called attention to the constructive work on the part of the members of the association in observing the Washington Resolution adopted at the request of the U. S. Secretary of Labor in the matter of eliminating Sunday work at the mills. Grafton Whiting, statistician, reported specifically on the following: depreciation survey; census of the industry for 1926; summary of operations for 1926; work done by assistant statistician; and charts and summaries covering mill operations. W. P. Paepcke and George Gair submitted reports covering progress to date in the effort being put forth to promote stabilization in quality and supply of waste paper.

Folding Box Group Meeting

Vice-president Hinkle, who presided at this meeting, gave a discussion with respect to sales promotion and how its activity may be carried on to benefit this branch of the industry. An interesting discussion was held on the subject of warehousing and goods and the need of the individual folding box manufacturer not to call upon members for the warehousing of goods for unreasonable or indefinite periods. Grafton Whiting, statistician, covered the following: general statistical and accounting service; summary of operations for 1926; depreciation; charts and summaries; census of the folding box industry; and proposed cost estimating manual.

Container Group Meeting

At this meeting General Manager Browder submitted report of "container" subjects. Among the subjects considered were the following: requested change in section 7 (a) rule 41; fiber boxes with ventilation holes; fiber boxes with hand holds; closure of telescope boxes; certificate of box maker; export trade in fiber containers; fiberboard wrapping for articles of furniture; interior cushioning for articles of furniture in fiber containers, and inspection service to improve the quality of corrugated and solid fiber boxes. The General Manager explained that the docket of subjects to be considered at the hearings of the consolidated classification committee and of the express classification committee are carefully analyzed; that all items of interest to the container manufacturer or his customers are promptly reported to the membership.

President Brunt announced the death of Joseph W. Weiss, of the J. M. Raffel Co., Baltimore, Md., since the last paperboard meeting.

Sidney Frohman, Hinde & Dauch Paper Co., submitted report containing the recommendations of the committee with respect to subjects under consideration, and specific recommendations were made on the following: Proposed standards of boxes to carry heavier weight limits; suggestions with respect to increasing the dimension limit of fiber boxes used for freight shipment; revised wording of "waterproofing" specification applicable to container board, cloth tape standards, and relations with federal specifications board. Grafton Whiting reported on the following: Depreciation, summary of operations for 1926; method of reporting double-wall production; charts and summaries of operations in container industry, and census of the container industry.

Three Group Meeting

President Brunt submitted report where mention was made of the following items: Finances; suggestions for increasing the association membership; form and scope of reports submitted by economist; study with view to elimination of fire

hazards in paperboard industry, and statement that all members of the paperboard group are operating in accordance with article 8 (a) relative to elimination of Sunday work in the mills.

The association voted an appropriation for the preparation of bound volumes of the Mellon Institute Monograph. Members of the association will be furnished with copies of the monograph.

There were several resolutions adopted in appreciation of the service rendered by Fletcher M. Durbin, who submitted resignation as a member of the Executive Committee, and who is retiring from active management of the Sefton Mfg. Corp.

There were interesting reports by the Sales Promotion Committee, General Manager Browder, and the Research Committee. Approval was also given to the rewording of the specification covering "waterproofing" as applicable to the container board industry, namely, "A board to be considered 'waterproof' must, when folded into tray form and suspended, hold water for a period of three hours without showing moisture on the opposite surface, except where sand holes appear, providing these are not excessive."

Dr. E. O. Merchant, the association's economist, read a report recommending the following policies: Be optimistic; buy raw materials ahead; do not sell at fixed prices for more than 30 days ahead; sell on quality and service rather than on price, and sell for profit, not for volume.

The next meeting of the association is scheduled for the West on September 21 and 22, committee meetings to be held on the 20th of September. Full details of the meeting have not as yet been announced.

An Exposition of Chemical Industries

The forthcoming Exposition of Chemical Industries, at the Grand Central Palace, New York, promises to be a remarkable one in many ways. Worthy of special note is the fact that foreign products, methods and practices will be shown for the first time, thus affording a comparison of foreign and domestic operations.

A development that has recently assumed a position of the highest importance in industry is the manufacture of corrosion-resistant metals; nearly a score of the various new noncorrosive iron and steel alloys will be shown. The extent to which research in the development of alloys of this kind is prosecuted may be appreciated when it is known that the United States Steel Corporation has established a department of research and technology which is expected to accomplish much for the development of processes of this kind which are so vital to industry. As director of the new department, Judge Gary selected John Johnston, formerly head of the Department of Chemistry at Yale University, and prominent in the affairs of the American Chemical Society.

The United States Steel Corporation has always taken the position of being sufficient unto itself, an attitude that is characteristic of many other large corporations and which has generally hindered progress. The laxness of the United States Steel Corporation in the development of corrosion-resistant alloys has been particularly noticeable and Judge Gary deserves praise for the establishment of a research and technology department for the study of chemical problems related to efforts for the production of rustless metals.

An excellent program of lectures has been provided for the exposition during the week of September 26 to October 1. A student's course on the fundamentals of chemical engineering and industrial chemical practice has been arranged. Registration for the course will start early on Monday, September 26, and classes will be held daily, the plans calling for two lectures a day for four days. The subjects will include the reduction of solid substances to pulverized form by apparatus of disintegration, as well as the mechanical separation of solids from solids, solids from liquids, solids from gases and liquids from liquids. The operations of evaporation, distillation and drying will also be subjects of study. In addition to class work and lectures there will be tours of inspection from exhibit to exhibit under competent guidance. All in all, the Eleventh Exposition of Chemical Industries at Grand Central Palace, New York, September 26 to October 1, promises to be one of rare interest and value.

A large attendance of pulp and paper mill chemists and engineers is expected at the exposition, for on Wednesday, September 28, a general meeting will be held under the auspices of the Technical Association of the Pulp and Paper Industry for the discussion of new appliances, machinery and developments in pulp and paper mill work. The tentative program, as arranged by the secretary of Tappi with the managers of the Chemical Exposition, is as follows:

1. **Pulp Washers and Stock Savers:**
   (a) United Filters—R. C. Campbell;
   (b) Oliver Continuous Filter—Charles Fuhrmeister, Jr.;
   (c) Vallez Rotary Filters—A. H. Vallez.
2. **Hydrogen Ion Control in Pulp and Paper Mills:**
   La Motte Chemical Products Company—W. A. Taylor.
3. **Evaporation in Chemical Pulp Mills:**
   Ernest Scott & Co.—H. Austin.
4. **Resisting Corrosion in Evaporation:**
   Chromium Corporation of America—Mr. Loengard.
5. **Dorr Equipment in Pulp and Paper Mills.**
6. **Smelting Furnace Lining:**
   Alberene Stone Company—Mr. Bryant.
7. **Daylight Illumination for Laboratories and Mills:**
   Sunlike Illumination Company—Walter N. Polakov.
8. **Microscopical Examination of Pulp and Paper:**
   Paper Structure and a New Form of Illumination—L. E. Foster (Bausch & Lomb).
9. **Continuous Centrifugal for Pulp and Paper:**
   Motion Picture Illustrations—W. C. Laughlin (Laughlin Filter Company).
10. **Minerals for Paper Use:**
    Southern Pacific Railway.

Mr. Dana is Dean of Forestry School

That the pulp and paper industry of the Northeast will suffer a distinct loss because of S. T. Dana's resignation as director of the Northeastern Forest Experiment Station is made more evident than ever by the study of the 1927 Investigation Report of this station, copy of which has been received by the Woodlands Section of the American Paper and Pulp Association. The report shows that all of the nine major projects listed as under way at the present time have some bearing on the problems of pulpwood production, and many of the fifteen minor projects are also of importance to pulpwood consumers. The studies of growth and reproduction, cutting methods and slash disposal in the spruce and balsam forests of the Northeast, have progressed far enough to warrant preliminary conclusions which are briefly stated.

Mr. Dana will assume the position of dean of the reorganized Forestry School of the University of Michigan, in the falls, and his many friends in the industry in the Northeast, while wishing him the best of success in his new position, are extremely sorry to see him leave Amherst.

New Zealand State Forest Man in U. S. A.

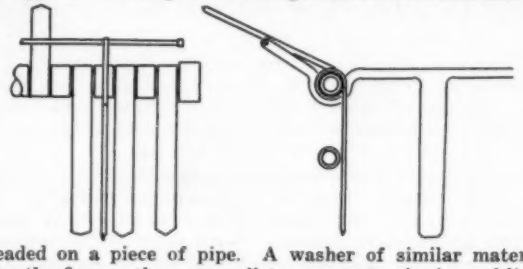
Alex R. Entrican, engineer in forest products of the New Zealand State Forest Service, arrived at the U. S. Forest Products Laboratory, Madison, Wis., recently with two carloads of New Zealand grown woods, both native and introduced, which the laboratory will test for papermaking qualities.

All the well-known pulping processes will be used in the tests, as well as the semi-chemical process which has recently been developed at the laboratory. Mr. Entrican stated that the pulping tests were being carried out because New Zealand foresters are obliged to find uses for the thinnings from extensive forest plantations which are just reaching thinning age in his country. He further estimated that it would be possible to operate permanently a pulp mill of 200 tons daily capacity on about 50,000 acres of forest there.

Practical Helps for the Mill Man

Desirable Form of Rack for the Head-box

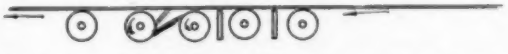
THE accompanying sketch shows a form of rack for the head-box of a paper machine which combines care of manufacture with ease of manipulation to affect the formation. Two forgings, one on each side of the head-box, form the support. The fingers are of eight-inch sheet brass and are



threaded on a piece of pipe. A washer of similar material keeps the fingers the proper distance apart. A piece of light pipe supported by the forging holds up any one of the fingers it may be desired to raise, to lighten the formation in that place. Another piece of pipe supported by brackets in the side of the head-box keeps the fingers which are down stiff against the current of stock. This brass rack is much cleaner than a wooden rack and makes the manipulations of the formation much easier and more flexible.

When Table Rolls Throw Water at High Speeds

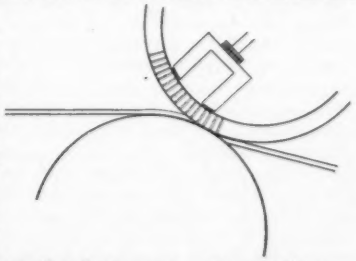
ON HIGH speed news machines, especially where the table rolls are close together, it is sometimes found that the formation is affected by the rolls throwing water. That is, the water from one roll strikes the surface of the next. This



roll then throws the water against the wire and causes bubbles and other faults in the formation. To prevent this, a small baffle was fixed between each two rolls. Then the water coming away from the point of contact of the table roll and the wire strikes the baffle and is deflected into the save-all. A distinct improvement in formation can be detected after this throwing of the water back against the wire is stopped.

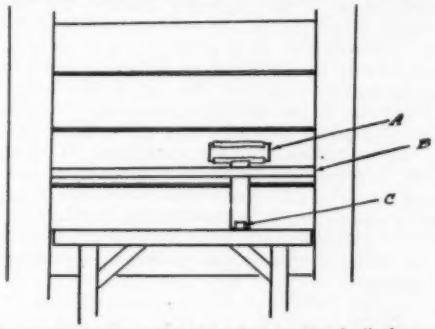
A Possible Change in Principle of Pressing

PAPERMAKERS operating high speed machines have long given some thought to the desirability of making some radical change in the principle of pressing. This has been forced on them by the difficulty of removing water from the pinch on fast speed machines. As all who have ever operated machines at 1000 feet or about that, know when only a little water is being pressed out and sometimes when there is a good deal, that water will not run away from the pinch. It has always been the custom to run the suction roll on the first press. Now mills are experimenting with suction rolls in the second and third or even the fourth press. A glance at the diagram will show that the presence of the perforated roll and the location of the suction box at or near the point of contact will provide immediate means for the escape of any water pressed out of the paper. At fast speeds, this means that water which was simply being pressed out of the paper into the felt until finally the felt became so saturated that no more water would leave the paper, is now going immediately into the suction box through the perforations in the roll. In such a case the press is really doing work. There is some thought of experimenting with a roll having a metal core of some kind and a covering of rubber with perforations as in the solid bronze roll. It is interesting, too, to note that a board machine superintendent is experimenting with solutions to the problem of how to get the water away from the pinch more rapidly.



Method of Supporting the "Wrapper" on Machine with Warren or Similar Calender Roll Doctors

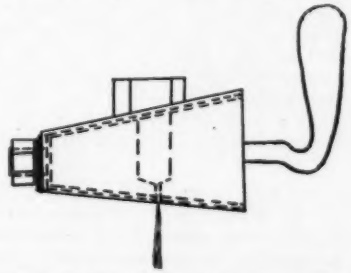
WHERE there are calender doctors with soft blades which are kept away from the rolls when the paper is in the stack, the problem arises of how to press wrapper stock or



dryer felt against the rolls in order to "make" the reel. (A) is a T-shaped affair made of wood with a thick piece of dryer felt attached to the cross piece. (B) is a heavy piece of pipe attached to the calender frame on each side. (A) is placed against the calender roll, the upright runs under the pipe and down to a substantial bench behind the stack. To press the pad of dryer felt against the calender roll, a wedge (C) is driven under the end of the supporting piece.

Squirt for Cutting Sheet Edge on Wire

THE accompanying sketch shows a nozzle for the squirt on the wire which has the properties of being easily cleaned and also capable of being repaired when the wear on the hole through which the water passes makes the stream undesirably large. At the top is shown the point of connection to the water supply pipe. The water is then concentrated in the dotted line chamber in the center of the plug and from this it passes through a needle fine hole to strike the sheet. As this needle fine hole wears larger, the metal surrounding it may be drilled out even with the large chamber. A new plug of metal is put in and the needle fine hole drilled again. This plug of metal should always be thick enough to provide sufficient metal so that the needle fine hole is an eighth or three-sixteenths of an inch long. On the length of this hole depends the straightness of the stream which hits the sheet and its freedom from tendency to scatter. The little nut at the left end of the nozzle regulates the tightness of the plug in the shell. The handle at the other end permits of turning the plug around so that the water runs in through the needle fine hole and the chamber—carrying away any dirt that may have lodged there.



NEW ENGLAND NEWS

Union Committee Confers in Holyoke

Easily the outstanding news is the effort made by the Paper Makers union to foster education among unionized employes of paper mills. Their studies in this regard were particularly fruitful in Holyoke though they visited all large paper making centers through the northeast. They also came to Boston and consulted leading authorities in this city on technical matters relating to paper making education. The state of Massachusetts has built up a splendid series of correspondence courses, "university extension" courses they are called and lists paper making among them, the headquarters being in the State House at Boston.

The committee stopped at the Hotel Nonotuck in Holyoke and studied vocational education there, conferring with mill representatives and particularly with Adam Wilkinson, labor commissioner of the American Writing Paper Co. John J. Bresnahan, chairman of the Holyoke school committee, was also asked for his ideas on paper making instruction both for apprentices and for skilled mechanics who desire a more technical knowledge of their subject. It is understood that the International Brotherhood of Paper Makers will incorporate in its recommendations, the use of textbooks prepared by the American Paper & Pulp Association. The mills as a whole are pleased at this effort on the part of the union to increase the usefulness of their members. It has been proposed that a committee of three representing the union in each paper center could work with a committee of local manufacturers or delegated committees of the A. P. & P. A. towards offering facilities for both practical, paper makers and beginners to educate themselves in the theory and technique of their work.

Warren Co. Install New Equipment

In their campaign to achieve spotless paper the S. D. Warren Co. have taken further steps. They have completed the installation of a No. 55 impact type powdered coal burner made by the Combustion Engineering Corp. of New York City.

S. D. Warren Co. have further fortified this minimum of smoke by the construction of a 378 foot concrete chimney, the highest industrial stack in New England. It has an inside diameter at the base of 27 feet 8 inches, at top, 18 feet. The walls are 18 inches thick at the base and 6 inches at the top. The total weight is 1624 tons, which rests on piles driven 45 feet into the ground.

A model coal handling plant is now being installed and should be ready around the first of September. This will take coal direct from the cars at Cumberland Mills to the pile and from the pile to the overhead bunkers, all by mechanical means. The coal is now fed from the bunkers to the powdering mill by an apron conveyor. Increased power at less cost is obtained by this new outfit but it incidentally links in with the efforts the Company has made to eliminate all possible dust, soot and dirt from the vicinity of the plant.

On July 30 the offices at 80 Federal street maintained by K. W. Ways for the Claremont and Groveton Paper Companies, were closed. All future New England business will be handled from the respective New York offices of these companies through Mr. G. N. Wetmore for Claremont Paper Co., and through A. N. Waring for Groveton Paper Co. The last named took over the New England territory of Mr. Ways four weeks previous to the date of the closing of the Boston offices.

Liberty Discontinues Waxed Lines

The Liberty Paper Co., a subsidiary of the Eastern Mfg. Co., has discontinued its waxed lines, and R. P. Teele, formerly in charge of the company's sales department, has opened offices at 131 State St., where he will conduct a business under his own name in waxed papers and similar specialties. He will represent the McLaurin Jones Co., of Brookfield, on gummed tape, and the Shawmut Waxed Paper Co., of Holliston, Mass., on waxed specialties in the greater Boston district.

John K. Dyke, speaking for the Liberty Paper Co., in its headquarters at 80 Federal St., states that the company will continue to be a distributor of the well known Liberty towels and the Liberty moistening machines.

Albermarle Paper Mfg. Co. has moved its offices to 38 Chauncey St., Boston. This office, in charge of C. L. Dodge, is New England headquarters.

Reversible Collar Co., operating a converting plant in Cambridge and manufacturing various cloth-lined paper specialties, have moved their main offices to 38 Chauncey St., Boston.

Kalamazoo Vegetable Parchment Co., New England headquarters at 99 Bedford St., Boston, announce the offering of a new line of apple wrappers to the New England trade. Chester E. Burnham is manager of the local office.

It is understood that the Eastern Manufacturing Co., owners of the Liberty Paper Co., which has operated a fine plant at Bellows Falls, Vt., will complete orders on waxed papers by the middle of August and then dispose of the equipment by private sale. The mill itself will also be on the market. The Liberty Paper Co. will be continued for the purposes already referred to.

It is reported in the Boston trade that Lee Higginson Co., the local bankers, are financing the Atlantic Gypsum Products Co., in its proposal to utilize the old paper mill at Portsmouth, N. H., for a fibre board mill. The Gypsum company manufactures various types of wall board and similar building materials from gypsum products and the acquisition of the Portsmouth plant will give it an opportunity to get into the fibre wall board field. It is hoped to have the New Hampshire unit operating on fibre board before the end of the year.

On July 14 the suit of George A. Bridges against the Great Northern Paper Co. was settled satisfactorily out of court. The hearing was being conducted before Associate Justice Spear of the Maine Supreme Court, and was brought by Bridges on account of alleged sums totalling $36,000, due as his share in lumbering operations in Rainbow Township.

American Writing Issues New Order Rule

The outstanding piece of New England news from a mill merchant angle was the decision of the American Writing Paper Co. to lead the way in the elimination of the small order evil insofar as it affects the mills.

In a very comprehensive announcement to its distributors, the big Holyoke company stated clearly the reasons for establishing certain minimum quantities, below which it would not accept orders. George J. Cadwell, sales manager, states that the tendency towards small orders and light stocks on both printers' and merchants' shelves is placing on the manufacturer more of the functions of the merchant. This is creating a dependence on the mill for the warehousing and shipping of small lots, which should be handled from the merchant's stock.

In the future no orders will be taken by the American Writing Paper Co. for less than two full mill packages, or no order acceptable for less than 1000 sheets if the paper involved is wrapped in packages of 500 sheets, nor for less than 500 sheets if wrapped 250 sheets to a package, for less than 250 sheets if wrapped 125 sheets to package, nor for less than 200 sheets when the mill unit is 100 sheets per package.

Freight Controversies

What the proper loading of waste paper per car should be is now before the New England Freight Association, though since the Boston & Maine R. R. withdrew their original

proposal of requiring a 60,000 minimum carload the matter has been in abeyance. Some increase in the carload minimum seems inevitable as the railroads make a very strong showing to back their contention that present New England rates are unremunerative. Though the B. & M. will continue the 60,000 minimum c.l. requirement on ex water shipments through Boston from England and the Pacific Coast, it is probable that they will compromise around 30,000 to 35,000 pounds for shipments originating in Boston and other New England points.

It is pointed out that the foreign and western bales of book stock moving to Fitchburg and other eastern Massachusetts mill points are loaded to practically 100 per cent of the cubical contents of the car, while domestic bales, being larger, load barely two-thirds of the actual cubical space within the car. By the use of smaller and denser bales it is believed the packers will have no difficulty in meeting the new minimum and will incidentally secure a lower rate. Fitchburg mills report receiving many cars of soft white shavings loaded 40,000 and 45,000 pounds per car.

The New England Freight Association received a petition on August 1st from the New England Paper & Pulp Traffic Association, representing 26 New England mills, requesting the publication of stop off in transit privileges, particularly for the Maine Central and Boston & Maine R. R. It is argued that greater tonnage would result to the railroads through the increase in sales of New England paper in the west and east central markets. The privilege would cost a nominal sum per car equal to 2 or 3c per hundred but would mean a saving of 40c per hundred upwards and would put New England on a parity with Wisconsin and Michigan mills selling eastern and Chicago markets. It would permit the loading of two less carload quantities at different mills, which together would make a full carload and shipment to destination at the carload rate from point of original loading.

James F. Lanigan

James F. Lanigan, well known paper mill machinery manufacturer, died at his home 239 Andover St., Lawrence, July 14, after a short illness. Mr. Lanigan was born in Ireland in 1843 and came to this country as a boy, starting as an apprentice in the Davis Foundry Co., and becoming superintendent in 1875 and owner a few years later.

In 1902 he bought the Emerson Mfg. Co., paper mill machinery manufacturers, and in 1909 the Lawrence Machine Co., manufacturers of centrifugal pumps. Fire destroyed these plants in February, though the Lawrence Machine Co. has since been rebuilt. Mr. Lanigan is survived by two sons and a daughter.

Edward A. Smith

Edward A. Smith, 80 years of age and for 53 years identified with Wilder & Co., newsprint manufacturers of Wilder, Vt., died July 2 at his home, 10 Park Ave., Winchester.

The Wilder interests at Wilder, Vt., were sold to the International Paper Co. Mr. Smith had retired from business for some years. He is survived by his widow and a son.

A. W. P. Financial Statement

The financial statement of the American Writing Paper Co. shows net earnings of $125,634 since its reorganization on March 1st, and after payment of bond and note interest of $123,333. The statement shows a liquid asset position of nearly 8½ to 1. This is the healthiest statement ever issued by the Holyoke company. Trade marks and goodwill are marked down to $1 compared to 18 millions under the old organization.

President S. L. Willson predicts that the company will show earnings for the fiscal year just as good as those of the first four months. Mr. Willson also states that tonnage of paper on order is far ahead of the usual amount at this time of the year.

The plant and equipment is valued at $10,546,106, the "Choral Properties" segregated properties, $550,000; prepaid expenses, $61,161; other deferred assets, $52,455, and smaller items. Liabilities are $526,022 accounts payable; $99,650 accrued accounts; first mortgage bonds of $5,500,000; preferred stock, $1,000,000; common stock, $318,522.

White & Wyckoff Mfg. Co., paper converters of Holyoke, have purchased the National Papeterie Co., of Holyoke, one of the oldest stationery manufacturers in the country, having been established in 1868. The products are greeting cards, typewriter papers, writing tablets, blank books, etc. The Springfield property will be operated as a unit of White & Wyckoff. J. L. Wyckoff is president and E. N. White treasurer and chairman of the Board.

The Morart Paper Co., of Holyoke, has been chartered under Massachusetts laws to manufacture, buy and sell paper products. Their capital is 500 shares of common and 250 shares of preferred stock. M. J. Moriarty, of South Hadley, is president, Charles H. Barr, of Holyoke, treasurer.

During the last week of July the annual shutdown occurred of all paper mills in Holyoke when the water was drawn out of the canals of the Connecticut river and the canals cleaned. The water will be sent through the usual channels Monday. Many mills were down for a ten-day period, including this canal cleaning time, making repairs and installations.

Arthur D. Little Acquires New Mill

Arthur D. Little, Inc., announces the incorporation of Windsor Locks Mills, Inc., which has leased the mills at Windsor Locks, Conn., formerly operated by the Windsor Locks Paper Mills Co.

Harvey E. Platt, treasurer of the J. L. N. Smythe Co., of Philadelphia, is president of the new company, and C. E. Carpenter and E. R. Adams of Arthur D. Little, Inc., Cambridge, will serve as vice president and treasurer. Directors include these officers and Laird H. Simons and T. H. Butler Smythe.

After addition of new equipment and improvements now under way the mills are expected to be put in operation in August, producing high grade waxing, manifold and other specialties. Daily production will be between ten and fifteen tons.

William A. Pike

William Allen Pike, 68 years old, died recently at his summer home in Stonington, Conn. He had been ill only a few days.

He began as a clerk in a Bridgeport store and was later employed by Chamberlin, Whitmore & Co., of New York. In 1893 he was making fine stationery in that city with Bradley A. Hard as partner. Arthur W. Eaton induced both to come to Pittsfield and join him in organizing the Hurlbut Stationery Co. Mr. Pike originated the well known phrase, "Made in Berkshire," as applying to the company's products.

In 1908 the late Senator W. Murray Crane, Zenas and Frederick Goodrich Crane bought a large interest in the concern, and it was re-organized under the name Eaton, Crane & Pike Co., from which Mr. Pike retired in 1922.

Blaw-Knox Buys Milliken Company

The Blaw-Knox Co., Pittsburgh, Pa., has purchased the Milliken Bros. Mfg. Co. of New York, and consolidation of the two companies becomes effective Sept. 1. The Milliken Bros. Mfg. Co. was originally organized as Milliken Bros., Inc., in 1857. Their products are transmission towers, radio towers and standard steel buildings. A considerable amount of their business has been in the export field, and they will continue to function in that field in addition to taking over the management of the export business of the Blaw-Knox Co. on all of its products.

The Blaw-Knox Co. will continue with its present organization to handle domestic business, and the acquisition of the Milliken Co. will make no change in this line. Manufacturing for both companies will be concentrated at the Blaw-Knox Co. plants at Pittsburgh and Baltimore.

The Month at Washington

AN INVESTIGATION into the question of maintenance of resale prices, as a guide to Congress in framing new legislation, is being undertaken by the Federal Trade Commission, covering economic advantages of resale price maintenance to manufacturers, merchants and consumers, and the evils of price-cutting from a merchandising standpoint. This broad investigation will be made for the benefit of trade and industry generally on price fixing, distribution and kindred topics.

Studies will be made of (1) advantages of resale price maintenance to manufacturers, wholesalers and retailers; (2) costs, margins, and profits of manufacturers and distributors, and the retail prices to consumers; (3) causes and motives for price-cutting by distributors, and (4) the relation of retail price maintenance to manipulation by distributors. Several bills have been introduced in Congress since 1920, notably the Capper-Kelly bill, the Merritt bill, the Wyat bill, and the Williams bill.

Retail price fixing presents probably the most perplexing question before the Federal Trade Commission, trade and industrial associations, and which is being widely discussed today throughout trade and industry. Conflicting decisions have been handed down by the courts. Among commercial leaders there is a sharp division of opinion as to the extent to which prices can and should be regulated. The investigation is expected to clear up these difficulties and to furnish valuable data for Congress as a guide in framing suitable legislation at the next session.

Tax Reduction Program.—Republican and Democratic leaders are in agreement that Federal taxes should be cut, but there is a sharp divergence of opinion concerning the extent to which they should be reduced, both as to amount and details. Congressman W. R. Green, Chairman of the House Ways and Means Committee, admits corporate taxes have not been reduced in proportion to the reduction in other levies, and is inclined to favor relief for incomes under a half million, but is opposed to the repeal of the Federal Estate Tax law. Congressman John N. Garner, ranking Democratic member of the Committee, favors a reduction of 10 per cent in the corporation tax, and the repeal of certain other taxes. He points out that small corporations pay heavier taxes than if they were run as a partnership. The Ways and Means Committee which will frame the bill, will be called to meet Oct. 31st to consider revision of the revenue laws, with the prospect of a week or ten days of hearings.

Simplified Practice Growing—The so-called buyer's market of the past several months has greatly stimulated competition. Price levels have steadily fallen and profit margins have been reduced because of this pressure. Consequently production costs and selling expenses are being carefully studied by manufacturers with an eye to their reduction. Merchants are also studying their costs of doing business, rates of turnover and profit opportunities more intimately than ever before. They are specializing in goods for which there is already a demand, for they afford quick turnover and better profit. The hand-to-mouth program of buying has thrown the inventory burden back on the manufacturer and he is meeting the situation by concentrating on the fast-moving items in his lines. The net result of the current business situation is an almost automatic application of simplification or stricter adherence to the rules laid down by the Division of Simplified Practice of the Department of Commerce, according to the views expressed by Ray M. Hudson, chief of this division. Seven projects for simplified practice are now under consideration for paper.

Lower Postage to Be Asked—The 70th Congress must determine a fundamental policy with respect to the future of the postal establishment, whether it is to be operated for service or for profit, says Congressman Clyde Kelly, a sponsor of postal legislation in past Congresses. Revision of postage rates, particularly as to post-cards and transient second-class matter, is inevitable, he thinks.

Ocean Air Mail Service—A bill authorizing the creation of an ocean air mail service, to be operated either by the Government as a pioneer development, or for the Post Office Department by private enterprises, as in the case of air mail routes over the U. S., will be introduced and probably become a law at the coming session of Congress, says Mr. Kelly.

Compilation of Weights and Measures Laws—The Bureau of Standards has just published a new compilation of laws of all the States, territories and insular possessions, and of the Federal Government of the U. S., known as "Miscellaneous Publication No. 20," which is on sale by the Superintendent of Documents, Government Printing Office, Washington, D. C., at $2.30 per copy. A comprehensive subject index makes the compilation most useful and convenient for reference. It is the only publication in its field, and has been critically compiled so as to present the law as it now exists.

Time Losses Through Ill Health—The Insurance Department of the U. S. Chamber of Commerce has just released an interesting bulletin on health and the improvement of sanitary conditions in industry. "The ability of a man or a woman to work, depends in large measure upon their health. It is generally known that a large proportion of illness may be avoided through simple precautionary measures. The saving from reduced illness is not easily ascertained, and the cost to manufacturers and merchants has never been measured, but in a number of leading establishments six days lost per individual each year from illness and injury proved an average experience. One prominent manufacturer with an annual payroll of approximately five million estimated the total annual cost of illness to his business, including charges for idle machinery and loss in production, to be $287,000.

Widespread Interest in Management Week—"Management's Part in Maintaining Prosperity" will be the theme for the 1927 Management Week program October 24-29, which will discuss ways and means of reducing waste and increasing efficiency in business.

Tariff Reforms—Steps to bring about a lowering of tariffs throughout the world have been taken by the Economic Committee of the League of Nations which met in Geneva recently, and to unify tariff nomenclature.

Codifying International Law—The 24th annual conference of the Interparliamentary Union at Paris, August 25-30, proposes to codify international law as an important step in eliminating flagrant injustice and numerous uncertainties which characterize the law in its present state, and which would put the solution of international disputes on a stable and generally accepted basis in the interests of peace.

Revised Form of Trade Acceptances—The Federal Reserve Board has advised users of and dealers in trade acceptances to revise the standard form in use so that no doubt may arise as to the negotiability of the document, to conform to recent decisions of the Supreme Court of Texas and Florida, where this wording was held non-negotiable: "The obligation of the acceptor hereof arises out of the purchase of goods from the drawer, maturity being in conformity with the original terms of purchase." The board recommends elimi-

nating this clause and substituting in lieu thereof: "The transaction which gives rise to this instrument is the purchase of goods by the acceptor from the drawer."

Recent Income Tax Rulings—Expenditures made by a business concern for cigars and cigarettes, presented to customers and buyers, for the purpose of fostering good feeling toward the concern, constitute ordinary and necessary business expenses and are deductible from gross income, says the Board of Tax Appeals (No. 7400).

Failure to produce evidence that debts claimed to be bad were ascertained to be worthless and charged off within the taxable year, and to show by competent evidence that such debts actually existed, is fatal to a proceeding for the redetermination of deficiencies in income taxes, says the Board in another ruling (No. 7948).

Partnership losses are losses of individual partners, and such losses must be deducted in the year in which sustained, and not in the year in which paid, says the Board (Nos. 8773-8774), where partners kept their books on the accrual basis and losses were sustained for which the partners gave their promissory notes to creditors.

A taxpayer may waive the benefit of any statute of limitations, or other statute of repose which may be enacted for his benefit where there is no actual or implied statutory inhibition against such a waiver, says the General Counsel of the Revenue Bureau (G. C. M. 1799). Waivers of the statute should not, therefore, be signed by taxpayers on behest of revenue agents as the government is barred from all collection if the statutory period has run.

A reasonable addition to a reserve for bad debts may be recognized in a case of debts represented by bonds, provided no deduction be allowed from gross income merely on account of market fluctuations (G. C. M. 1887).

Handbook of Labor Statistics—The Handbook of Labor Statistics, just issued by the U. S. Bureau of Labor Statistics, brings together in convenient form digests of all important material regarding labor conditions in the U. S. The subjects are taken in alphabetical order, such as apprenticeship, arbitration and conciliation, child labor, convict labor, cost of living, employment, prices, workmen's compensation and other forms of social insurance, etc.

Wholesale Prices—The index numbers of wholesale prices by the Bureau of Labor Statistics on the basis of 1913 as 100 per cent, shows:

Group	1926	1927		Purchasing power of 1913 dollar in
	June	May	June	June (cents)
Paper and pulp	175.3	152.7	152.2	65.7

Interstate Commerce Commission Rulings—Fourth-class rating and rates found applicable until May 1, 1927, on less than carload shipments of corrugated fiber boxes, knocked down or folded flat, from Omaha to destinations in Iowa, and refund of overcharges directed, in a ruling just handed down in the case of Eggerss-O'Flying Co. vs Chicago & N. W. Rwy., No. 17,773, while second-class rating and rates applicable on and after May 1, 1927, were found unreasonable. Third-class ratings and rates were prescribed and reparation awarded.

Rates on newsprint and wrapping paper, in carloads, from Camas, Wash., and West Linn and Lebanon, Ore., to Oregon, Cal., Nev., Mont., Wyo., Colo., Ariz. and Tex., found unreasonable or unduly prejudicial, in the case of Crown Willamette Paper Co. vs Western Transportation Co. (No. 16,064).

Rates on printed waxed wrapping paper, in less than carloads, between points in official territory, found unreasonable, in Bakeries Service Corp. vs Boston & Me. R. R. (No. 18,050).

Rates on newsprint paper, in carloads, from New Orleans to El Dorado, Ark., found not unreasonable but unduly prejudicial, and non-prejudicial basis of rates prescribed and reparation denied in Chamber of Commerce vs Chicago, R. I. & Pac. Rwy. (No. 17,633).

Rates on imported wood pulp, in carloads, from Hoboken, N. J., Philadelphia and Baltimore to Garfield, N. J., and from Baltimore to Passaic-Dundee, N. J., found unreasonable, and reasonable rates were prescribed for the future and reparation awarded, while rates from New York City to these points were found not unreasonable, in Hamersley Mfg. Co. vs Erie R. R. (No. 16,531).

Rates on wrapping paper, in carloads, from Bastrop, La., to Dallas and Wichita Falls, Tex., found not unreasonable and complaint dismissed in Callas Paper Co. vs Ark. & La. Mo. Rwy. (No. 17,752).

Rates on newsprint paper, in carloads, from Carthage, N. Y., to Newark, N. J., found not unreasonable, unjustly discriminatory, or unduly prejudicial, and complaint dismissed in Newark Call Printing & Pub. Co. vs Central R. R. of N. J. (No. 18,314).

The Washington Publishers' Association won over the B. & O. (No. 15,199) on shipments of newsprint paper from Philadelphia and points in New England, N. Y. and Canada to Washington, D. C., and awarded reparation.

Rates on waste paper, in carloads, from Boston to Thomson, N. Y., were found unreasonable and a rate prescribed for the future, with reparation awarded, in United Paperboard Co. vs Boston & Albany R. R. (No. 18,135).

Rate on one carload of printing paper from Appleton, Wis., to Dallas, Tex., found unreasonable and reparation awarded, while rates on two mixed carloads of printing and writing paper were found not unreasonable in Practical Drawing Co. vs Chicago & N. W. Rwy. (No. 18,114).

Recent U. S. Customs Decisions—A ruling just rendered by the U. S. Customs Court fixes duty at the rate of 25 per cent ad valorem under par. 1303, 1922 Tariff Act, as manufacturers of pulp not specifically provided for, on certain merchandise described as "extraction thimbles and diffusion shells," and imported by C. Schleicher & Schull Co., the action of the collector in assessing duty at 35 per cent under par. 1313, as manufacturers of paper, is therefore set aside. (No. 160,998-G-12,837-26).

A protest filed by Van Oppen & Co. against the collector's classification of certain merchandise invoiced as "15 bales flax noils (paper making material), is overruled in another decision, and the collector's assessment under par. 1001 at three-fourths of one cent per pound is sustained. The importer claimed free entry under par. 1651 as paper stock. (No. 200138-G-46140-26.)

In a decision sustaining a protest of Geo. Borgfeldt & Co., of Seattle, in which the customs rate on certain imported paper boxes is lowered to 5 cents per pound and 20 per cent ad valorem under par. 1305 (No. 110278-G-8237).

Paper "wholly or partly covered with metal" has been held by the Treasury Division of Customs to be dutiable under par. 1306 of the tariff act of 1922, thus ending the variance between different collectors in levying their assessments.

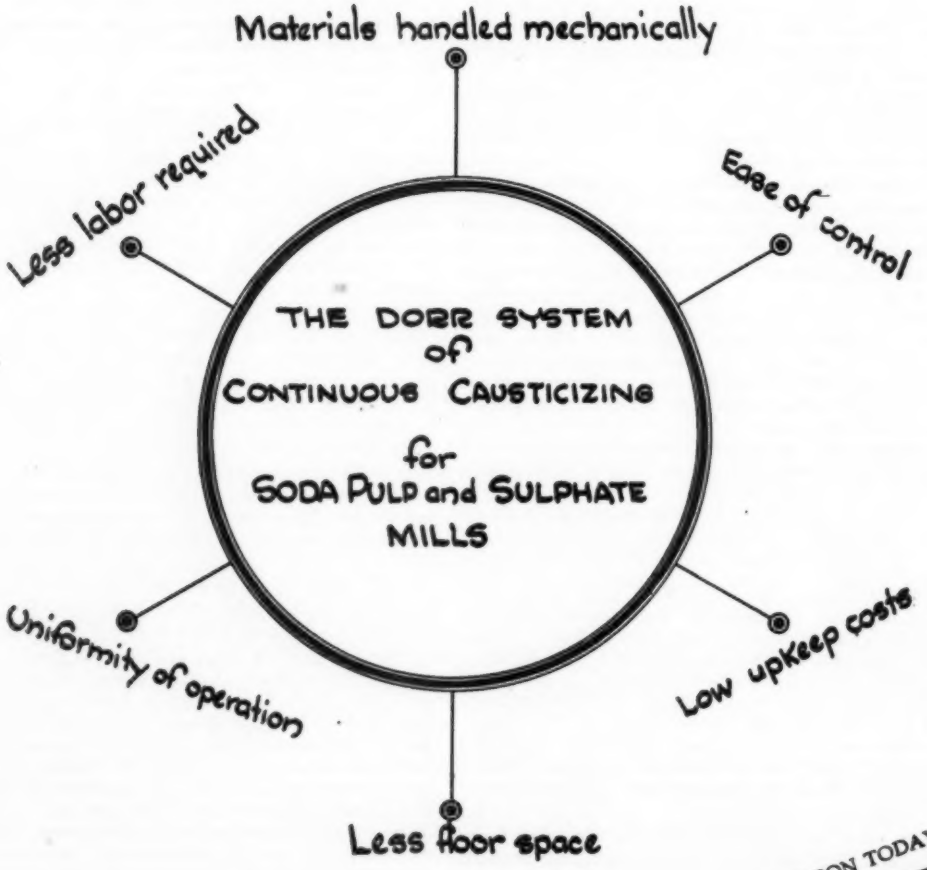
Virginia as Pulp Source.—The sub-committee of National Committee on Wood Utilization says there is a great deal of non-utilized wood in Virginia, which can be utilized by the pulp mill and to this extent and for the better utilization of wood waste, questionnaires have been sent to all the saw mills and woodworking plants in Virginia for the purpose of making a survey of sources of supply. "We often find," says J. P. Hummel, chairman, "that sawmills convert these logs into lumber at an actual loss, while they would better serve as raw-material for pulp manufacture. At the same time many pulp mills are using large sized logs which would yield a higher revenue if converted into lumber." He also states that his company at Hopewell, Va., has recently begun the use of saw mill slabs of pine for making paper pulp and is now receiving about 40 to 50 cords per day of this material from points along the line of the Norfolk and Western. "Freight rates," he says, "are a chief limiting factor in the collection of these slabs from a wider territory."

Use of Turpentine and Rosin.—Industrial concerns using turpentine and rosin in their products consumed the following during 1926 as contrasted with 1925:

Paper and paper size—6,956 gals. of turpentine in 1926
325,312 (500-lb. bbls.) of rosin
5,874 gals. of turpentine in 1925
313,365 (500-lb. bbls.) of rosin

6 Points of Interest

to Soda Pulp and Kraft Mill Superintendents ~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INVESTIGATION TESTS DESIGN EQUIPMENT

PACIFIC COAST NEWS

Coast Adopts 1000 Count

Pacific Coast paper tradesmen have followed the lead of their Eastern brethren by adopting the "thousand sheet count" advocated as a new basis for simplifying the tallying and weighing of paper.

The date for inauguration of the new method in San Francisco was set for August 8 and Charles Kahn, secretary of the Pacific States Paper Trade Association, believed the plan would become effective in other coast cities at the same time. The practice of packing many lines of paper in cartons is developing simultaneously with the adoption of the thousand sheet basis, Kahn believes.

All the San Francisco jobbers of paper have prepared new price lists and catalogues to take note of the adoption of the new system and heads of some of the larger companies seemed in agreement in favoring the move as a means of benefiting the paper trade and printing craft.

Necessity for changing the trade conversation as well as the price lists was cited by Charles Pritchard, sales manager of Bonestall and Company.

"Under the new plan the word ream becomes obsolete," he pointed out, "so we have carefully deleted the word from our printed matter and must train ourselves not to use it in our speech. In the future we will speak in terms of 'thousand' and 'half thousand'."

Larger purchases of paper by printers was foreseen by O. C. Doane, sales manager of the Pacific Coast Paper Co., as a result of the new plan.

Everything was ready for the change at the Zellerbach Paper Company, on the first of August. "The Informant," Zellerbach's house organ, devoted a good deal of space in a recent issue to explanation of the move and copies of the issue were sent to the Zellerbach printer customers to familiarize them with the contemplated change.

Arthur Towne of Blake, Moffitt and Towne, said that several paper mills represented by his company were prime movers in the adoption of cartons for packaging paper.

The Pacific States Paper Trade Association, at its May convention at Del Monte, approved the thousand sheet count and moved to adopt the system before October 1 of this year. This action was taken after W. Noble Gillett, Chicago, vice president of the National Paper Trade Association, Fine Paper Division, had spoken in favor of the change. Explaining the thousand sheet count in a few words, Mr. Gillett said:

"What is the thousand sheet plan? Simply this: Forget the ream, use 1,000 sheets as a unit of count and weight, figure jobs on the basis of 1,000, order so many thousand or fractions of a thousand sheets and of the weight per thousand sheets."

New Mill at Sacramento

A fifty ton sulphite pulp mill will be constructed immediately at Sacramento, Calif., by the newly incorporated Sacramento Development Company, S. M. Bump, president of the firm, has announced. The mill will be the second pulp plant to operate in California, the only other one being the Crown-Willamette Company's mill at Floriston. It will make no paper but has already signed contracts with paper mills, it is announced, for the sale of its pulp.

The mill is to be located five miles from the State Capitol, in Sacramento, on a 527 acre tract of land belonging to the company. It lies between the tracks of the Southern Pacific and Western Pacific railways. For making the pulp, slabs and edgings from California sawmills, and cordwood will be used. All the timber will be white fir, which, according to data furnished the company by the United States Forest Products laboratory of Madison, Wis., is excellent for the manufacture of pulp.

Construction of the new mill is expected to begin by October and to require nine or ten months. The plant will cost about $700,000. The company has been organized under the laws of the state of Nevada and is incorporated for $2,500,000. Officers are, President, S. M. Bump of San Francisco; Vice President, A. H. Land, of Oroville, Calif.; Directors, Harry Ballou, San Francisco; Ernest P. Lowe, San Francisco; Kenneth A. Millican, San Francisco; and H. M. Wade, San Francisco.

Coating Paper Progress

The coating of white paper, an industry new to the West, was started in San Francisco last year by the pioneer Schmidt Lithograph Co. The venture has proven so successful that the first has found it necessary to double its capacity in the coating department.

For many years the East furnished all the coated papers used on the Pacific Coast but the Schmidt Lithograph Co. was not satisfied with the paper it imported from Eastern states.

"After trying everywhere for coated paper that would prove satisfactory to our customers," says Richard Schmidt, Jr., secretary of the company, "we decided to put in our own plant and turn out the best coated paper possible. Coated paper we had been receiving curled or wrinkled or stretched and was unsatisfactory."

When they installed the new department, the company brought J. B. Morrow, a veteran paper mill man, from the East and purchased the most modern machinery available at an expense of nearly $100,000. Morrow had been in charge of coating plants for many years and was familiar with both production and selling ends, having sold paper in Oriental countries for a number of years. Compared with some of the big eastern mills, with their thirty or more paper coating machines, the Schmidt plant, with but one machine, is small; however, it is "all-Western" and is growing.

The Kelso Paper Co. has filed articles of incorporation in Washington and plans to build a paper mill of thirty tons capacity at Kelso. P. J. and Stephen F. Gallagher, of Portland, Oregon, and E. A. Knight, of Kelso, are interested in the venture. The mill is to be built on the site of the Kelso Shingle Company and adjoining property. The site has a 2,000 foot frontage on the Cowlits river.

Astoria Project Progressing

The seven-unit plant of the Northwestern Pulp and Paper Co., which is to cost between one million and one and a half million dollars, is fully planned and construction is to begin in the near future. Plans were sent out to a responsible group of engineering contractors last month and the dates of August 8 to 10 were fixed for the receiving of all figures.

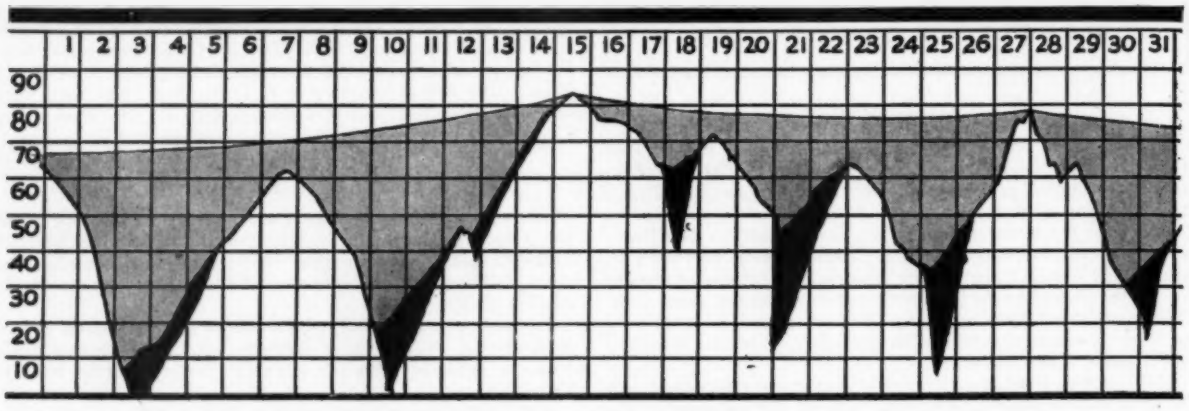
The operations in Astoria, where the plant is to be erected, will be under the general supervision of Vance P. Edwards, former chief sulphite engineer for the U. S. Government Forest Products Laboratory, Madison, Wis. He will also act as mill manager, and his duties will include all research work in a well appointed chemical laboratory which is to be part of the plant equipment.

Henry M. Ford, chief construction engineer, formerly of Wisconsin and later of Chicago, will have immediate supervision of the construction work. He has been connected with L. A. DeGuere, V. D. Simons, G. W. Mead, and for a number of years with E. P. Gleason, chief engineer of Nepco Mills in Port Edwards and Nekoosa, Wisconsin.

The company is planning many new departures from the regular sulphite pulp mill, and it is reported that when it is completed, it will not only be the lowest production cost plant on the Pacific coast but that it will produce the cleanest and best quality of sulphite pulp.

B. T. McBain, who maintains offices in the Oregonian Bldg., in Portland, Oregon, will supervise the construction and management engineering. The plans submitted to engineering contracts were handled from his office.

Included in the pulp mill will be a 150-ton Jenssen acid system; five large sulphite digesters; pulp drying equipment of the latest design; high pressure boilers and electrical gen-



Eliminate the "Valleys" in Production Quality

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OFTEN a chart of paper production—from a quality standpoint—would disclose unprofitable dips or "valleys."

In many cases this descent from high standards of production may be traced to the size and the manner in which sizing operations are conducted.

The use of Kalbfleisch Rosin Size and System may be depended upon to maintain sizing results at a profitable level. Kalbfleisch Rosin Size has established an enviable reputation for cleanliness and uniformity; and the helpfulness of the De Cew Sizing System, installed and supervised by Kalbfleisch engineers, likewise is established.

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erators for power; also plans are to install the Ruths accumulator, steam reservoirs put out by the Combustion Engineering Co.

The digesters are to be 16 feet in diameter and 50 feet high, having a capacity of 13 to 14 tons each per cook with a turnover of at least two cooks per day. The boilers will be rated about 500 h.p. each from 400 to 450 pounds pressure with 200 degrees superheat.

A sawmill capable of cutting 500,000 feet in a 24-hour day, will be owned by the company and spruce and hemlock waste from this mill will be used as pulp wood for the sulphite product. Hog fuel to supply steam for the pulp and by-products plants will also come from this mill.

In installing the equipment for the plant, great care and considerable expense is to be made, such as for dressing rooms for men and women.

It is expected that the president of the company, Charles R. Flint, of New York, will visit on the Pacific coast at the time that the construction is in progress. Work is to begin immediately following the awarding of contracts which will probably take place during late August. Officers and directors in the company are: Charles R. Flint, president and director; C. W. King, executive with Dupont and Dunham; A. J. James, capitalist and director; B. T. McBain, director, vice-president and general manager; C. W. Fulton, director, secretary and attorney; W. M. Macphail, civil engineer; Robert T. Jacobs, tax counsellor; H. C. Wechsler, director; Myron W. Robinson, director; Daniel Mungall, director; A. V. Allen, director and vice-president; Frank Patton, banker and capitalist; Amedee M. Smith, banker and realtor, and Chas. W. Miller, assistant treasurer, O. W. R. & N. Co., Portland, Ore.

The site of the Northwestern Pulp and Paper Co. is the district known as Youngs Bay where the Youngs River empties into the Columbia. It is on the property formerly occupied by the Youngs River Lumber Co., and the McEachern Shipbuilding Co., which existed during the war.

A recent report from Astoria was that the Astoria Chamber of Commerce will undertake a campaign to obtain $170,000 in stock subscriptions for the Northwestern Pulp and Paper Co., the subscriptions to be based on an escrow agreement.

According to the terms of this agreement the stock shall remain in escrow until: "A contract is signed for the construction of a 100-ton pulp and paper mill, to be signed by October 15, 1927. The contractor gives a surety bond to complete the contract for construction of the plant by October 15, 1928. The surety bond given by the contractor is unanimously approved by Frank Patton, W. A. Tyler and S. W. Lovell, Astoria presidents."

The city of Astoria has agreed to bring water in from Young's river, a distance of about ten miles, and has contracted with the paper company to supply pure water for its operation.

The firm of D. D. Madden and Co., Portland, Ore., has completed reorganization and now is known as the Pacific Northwest Paper Mills, Inc. Mr. Madden, who was president of the business bearing his name, will continue as president of the reorganized concern. Other officers are Coler Campbell, vice president; and L. R. Welles, secretary-treasurer. Both are formerly of Minneapolis, Minn. Directors are Theodore B. Wilcox, of the Wilcox Investment Co., of Portland, and Prescott W. Cookingham, attorney.

Progress at Tumwater Mill

The new mill of the Tumwater Paper Mills, at Tumwater, Wash., will begin production before September 1, according to R. L. Shepherd, secretary-treasurer, if the present rate of construction is maintained. Five carloads of the Beloit paper machines have arrived already and other parts have been shipped. Quantities of pulp wood arriving daily are a guarantee of operation as soon as the plant is ready.

Two men have been added recently to the Tumwater staff and are helping to speed production work. P. J. Vernig, named superintendent of the plant, formerly was assistant superintendent of the Hawley Pulp and Paper Co., at Oregon City, in charge of wrapping papers. Hoyt Wilson, who will be in charge of the programming and shipping department, also had a number of years' experience in that line of work with the Hawley company.

Grays Harbor Buys Lumber Tract

The Grays Harbor Pulp Co., of Hoquiam, a subsidiary of the Zellarbach Co., purchased more than 100,000,000 feet of hemlock and spruce timber in the lower Humptulips basin in June. The tract, which consists of between 4,000 and 5,000 acres, was purchased from an Aberdeen timber dealer.

The property is adjacent to tidewater so that logs can be towed directly from North Bay to the mill. The property will fortify the company against a possible shortage of spruce or hemlock. Because the mill waste contracted for the company is enough for the present needs of the mill, it is not expected that the timber will be logged off at once.

New Warehouse for Hammersley

Another warehouse for the Pacific Coast, to be located in some city of the Pacific Northwest, is planned by the Hammersley Mfg. Co., of Garfield, N. J., according to E. J. Kieffer, Coast representative of the firm. The new warehouse probably will be ready by the first of next year.

Kieffer has been in the paper business on the Coast for about 20 years and has offices and warehouses in San Francisco and Los Angeles.

Possible development of a pulp mill in northern California in the redwood district, is indicated by the filing for water rights on the Eel river near Scotia, California, by the Pacific Lumber Company. This company has admittedly been looking into the possibilities of redwood timber for pulp manufacture. Several shipments of redwood pulp timber have been shipped to mills in Wisconsin and it is reported that one batch was worked up, entirely unmixed with other woods and produced a high grade kraft paper. Better strength and texture are two features claimed for the redwood pulp.

New Kraft Mill at Port Townsend

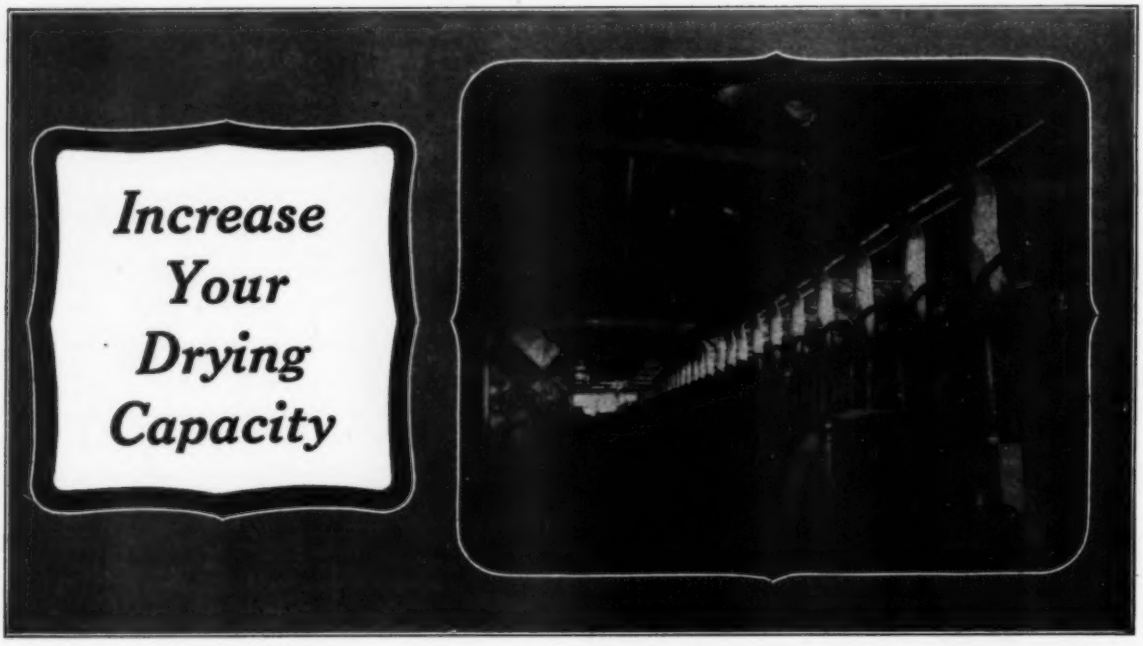
As soon as preliminary problems as to title to site and water supply have been settled, the Zellerbach Corporation will begin construction of a kraft mill to cost upwards of $2,500,000, at Port Townsend, Wash.

The water is to be brought from the Big Quilcene river, a distance of some thirty miles, according to K. O. Fosse, in charge of the Zellerbach office in Seattle. The water development will cost approximately $800,000. Port Townsend is to vote on the proposition of raising $150,000 by public subscription for its part in assuring the water supply. The amount over and above the city's share is to be raised by floating general bonds.

Port Townsend is about 45 miles north and slightly west of Seattle on the western shore of Puget Sound. The city has an excellent harbor and access to some fine timber country.

W. J. McGinnis has arrived in Portland, Oregon, from the Valley Iron Works, of Appleton, Wis., to take charge of the pulp and paper engineering department of the Smith and Valley Iron Works at Portland. McGinnis points out that the Portland branch makes more accessible to the Western field the full line of machinery that has been manufactured by the Valley Iron Works back in Wisconsin. This plan gives the user the benefit of better service on new machinery, speedy repairs and a great saving in freight. Joseph W. Gill remains as chief engineer of the Smith and Valley Iron Works.

A. J. Lewthwaite, vice-president and resident manager of the Crown Willamette Paper Mills located at Oregon City, is recovering from a fall which he sustained at his home in Portland, Ore. He was taken to a local hospital for treatment and made rapid recovery.



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Canadian News

Newsprint Capacity Exceeds Demand

The problem attracting most interest in industrial and financial circles at the present time is undoubtedly the future of the newsprint industry. Many are frankly pessimistic over the rapidity with which production is expanding, especially in view of the admitted fact that existing mills have for some months past been producing at from 15 to 20 per cent below capacity. According to Hubert Biermans, former president of the Belgo-Canadian Paper Co., which was acquired some time ago by the St. Maurice Valley Corp., over-production will be a serious problem in the industry for the next four years. He gave statistics of immediate and prospective output in support of his contention, and intimated that it was doubtful if the present price of $65 per ton could be maintained.

During a recent visit to Montreal, A. R. Graustein, president of International Paper, admitted that the productive capacity of the mills at the present time is in excess of the demand, but he was not prepared to say whether the adjustment would be a matter of one, two, or four years, and he added that he saw no reason why the price of $65 per ton should be reduced.

It should be noted that the figures published monthly by the News Print Service Bureau do not show any great excess of production over consumption and mill stocks are not being built up to any great extent. This indicates that producers, through their organization, are controlling output and keeping it in step with the demand. Both output and consumption are considerably ahead of the corresponding period of 1926; and the problem now seems to consist in avoiding flooding the market, which would necessarily result in a drop in price.

Canadian newsprint production for the month of June was slightly lower than for May, but was considerably ahead of June, 1926. The mills operated at a slightly lower rating in June than May, due partly to the decreased output and partly to the starting up of a new 125-ton machine. The slight decline in production must be considered as seasonal.

The fourteen field men employed by the Canadian Forestry Association have already held 750 public mass meetings and have enlisted 170,000 people as friends of forest protection. The best indication of the aroused public interest in forest fire prevention lies in the weekly record of audiences at the Forestry Association meetings in all parts of Canada.

A. M. Koroleff, logging engineer and secretary of the Woodlands Section of the Canadian Pulp and Paper Association, has been making acquaintances with the personnel of the woods departments of the Canadian mills and familiarizing himself with their problems, having already visited the Laurentide, Abitibi, Spanish River and International Paper woodlands, and has conferred wth the Ontario and Quebec provincial departments which have charge of timber lands.

The contents of the main office, timber testing, timber physics and wood preservation divisions of the Forest Products Laboratories of Canada have been removed from Montreal to Ottawa, and demolition of the vacated building has already been started. The new Cellulose Building to be erected on the site is expected to be ready for occupancy early next year.

Munroe Supports Paper Mill Deal

Premier Munroe, of Newfoundland, recently informed the Legislature that negotiations between the Government and International Paper, of New York, for the purchase by the latter of the pulp and paper mills at Corner Brook, on the West Coast of the Island, were progressing favorably, and an agreement is hoped to be reached which will be satisfactory to the entire country. Mr. Munroe stated that the Canadian firm rumored to be negotiating for the mills, was merely assisting the Government to make better arrangements with interests of the International Paper Co.

Premier Munroe has also announced that the Newfoundland Power and Paper Co. has paid the half year's interest, due July 15, on debentures guaranteed by the Newfoundland Government toward the construction of the plant, and it is expected the company's decision in the matter will facilitate these negotiations.

Canadian exports of pulp and paper in June were valued at $16,054,682, an increase of $1,900,559 over the previous month and of $1,367,557 over June, 1926.

Brotherhood Investigates Educational Work

Members of the education committee of the International Brotherhood of Paper Makers met representatives of the Canadian Pulp and Paper Association, the Institute of Industrial Arts' School of Pulp and Paper Making, and members of the McGill University departments of cellulose and industrial chemistry and extension courses at a meeting held at McGill University on July 18th.

The committee came to Montreal to acquaint themselves with the work that is being done in the Province of Quebec in technical instruction to paper makers, and J. N. Stephenson explained to them what various Canadian agencies which have undertaken work along these lines are doing.

McGill University authorities indicated that, while the particular type of vocational training required was not possible for the university to undertake directly, the university was interested in the investigation and was ready to do everything possible to forward educational effort.

Canadian Wall Paper Companies Combine

Through the efforts of John T. Chasney, representing Wallpaper Manufacturers, Ltd., of England, Watson-Foster Co., Ltd., of Montreal, Colin McArthur, Inc., of Montreal, The Reg. N. Boxer Co., of Toronto, and Stauntons, Ltd., of Toronto, have been merged into the Canadian Wallpaper Manufacturers' Association, Ltd., with headquarters in Toronto. Mr. Chasney is head of the new executive committee, on which each of the four former concerns has a representative. No new financing will be undertaken in connection with the deal.

As far as is known, the Canadian Wallpaper Manufacturer's Association will be only a holding company, with the president of each member firm on the executive committee. It is the intention to enlarge the capacity and increase the output of the factories. For the time being there will be no change in the operations of the individual firms forming part of the association.

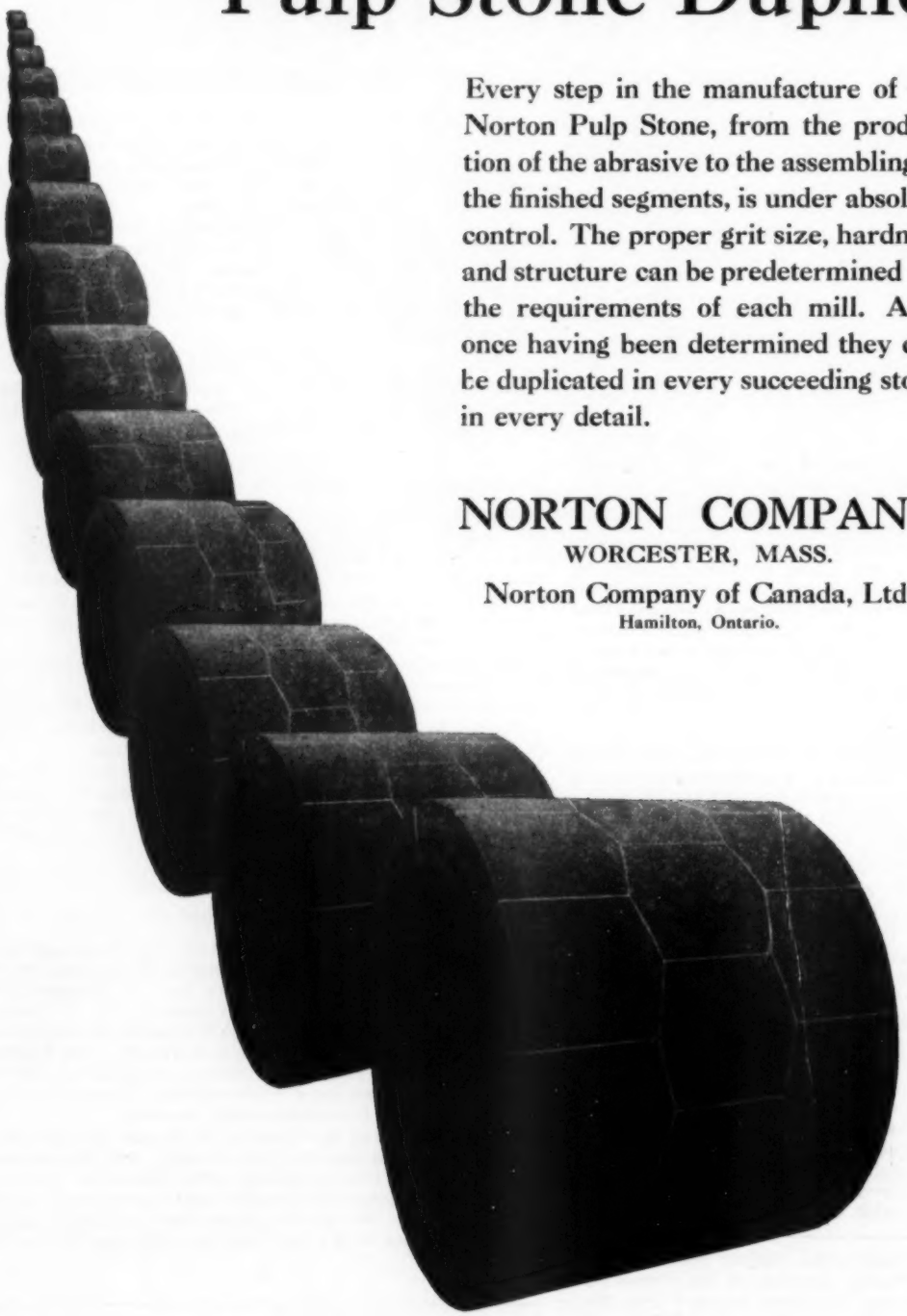
QUEBEC

Urge Government Grant

The municipal councils of Chicoutimi and Rivière Moulin have adopted resolutions asking that the Provincial Government grant to the Quebec Pulp and Paper Mills, Ltd., sufficient local forest lands to assure the establishment and operation of a paper mill at Chicoutimi.

The resolution reads that the terms of the grant should

Pulp Stone Duplication



Every step in the manufacture of the Norton Pulp Stone, from the production of the abrasive to the assembling of the finished segments, is under absolute control. The proper grit size, hardness and structure can be predetermined for the requirements of each mill. And once having been determined they can be duplicated in every succeeding stone in every detail.

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NORTON
PULP STONES

guarantee that the concessionaries should have in operation inside of two years a paper mill in the Chicoutimi town limits, of a capacity of not less than 250 tons a day. Copies of the resolutions have been forwarded to Premier Taschereau and Honoré Mercier, minister of lands and forests, at Quebec.

New Forest Protective Association

To fight forest fires and to protect lands in the Gatineau district, a new organization has been formed, with headquarters in Hull. It will co-operate with lumber firms and the Government.

The organization, which is to be known as the Lower Ottawa Forest Protective Association, Ltd., has been granted letters patent by the provincial Government, and will be allowed to own property up to $25,000 in value.

The incorporators are F. M. Benson, F. J. Arthurs, F. H. Cairns, H. Kennedy, C. V. Ceasar, R. MacLaren Kenny and T. F. Kenny.

Considering New Mill Near Ottawa

The Fraser lumber mill property, between Deschenes and Aylmer near Ottawa skirting the Ottawa River, has been sold to the Canadian Power and Paper Investments, Ltd., one of the Nesbit-Thomson interests.

While definite information is lacking, it is reported that a 300-ton newsprint mill is under serious consideration for construction on the property.

In consequence of the refusal of the Dominion Government to keep three divisions of the Forest Products Laboratory at Montreal, W. Kynoch, superintendent of the laboratories, has tendered his resignation, having in the meantime accepted an important position in the newly-established forestry department of University of Michigan, at Ann Arbor, Mich.

Canipco News

According to unconfirmed reports from Ottawa, it is possible that International Paper may get control of the water powers at Carillon, on the Ottawa River, where some 400,000 h. p. could be developed. The action of the Government in blocking the efforts of the Sifton interests to secure control of Carillon, and the cancelling of the lease of the National Hydro-Electric Co. of Montreal (owned by the Shawinigan interests) shortly after the last session of Parliament, are regarded in certain quarters as preliminary steps taken to clear the Carillon situation of any entanglement, and that International Paper may be given an opportunity to become party to a development scheme similar to the agreement arranged last summer between the then Meighen Government with the provincial governments of Ontario and Quebec and the Shawinigan power interests. The situation is expected to be definitely settled this fall.

The third 34,000 h. p. unit of the Chelsea power house has been started and is supplying power to the Gatineau newsprint mill.

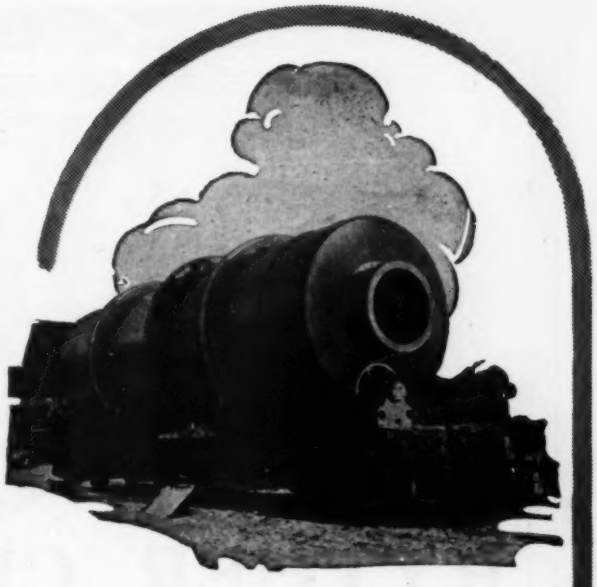
Gatineau Power Co. has officially announced the purchase of the Ottawa-Montreal Power Co. and of the Quebec Southern Power Corp.

Owing to the formation on the upper reaches of the Gatineau River of two big log jams, which could not be broken up with dynamite, the big Mercier dam at Bitobi had to be opened for a short time. This raised the level of the river some six feet, and effectively broke up the two jams without causing any damage to property along the river banks.

The second 24,000 h. p. unit in the Farmers power house has been turned over and is now in operation. This unit and the first unit, which was started on May 8th, are supplying power to the Gatineau newsprint mill a few miles distant.

The third machine in the new Gatineau mill has started making paper, and the fourth machine will be started up shortly.

The British Foreign and Colonial Corp., of London, England, have placed privately 1,200,000 pounds of 6½ per cent de-



Designed for Dependable Service

All Manitowoc Equipment designed for the paper mill is durably built and will give steady uninterrupted service because:

1. Only the best grade of materials is used.
2. Highest class of workmanship is maintained throughout.
3. All pieces are precision-made.
4. Heavily and durably constructed.
5. All equipment is built for longer life.

Our experience of over a quarter century in designing and building Digesters, Incinerators, Disc Evaporators, Refiners, Barking Drums, Blow Pipes, Globe and Cylindrical Rotaries, Rod Mills and other equipment, is your guarantee of satisfaction.

Write us today about your requirements.

Manitowoc Engineering Works
Manitowoc, Wisconsin

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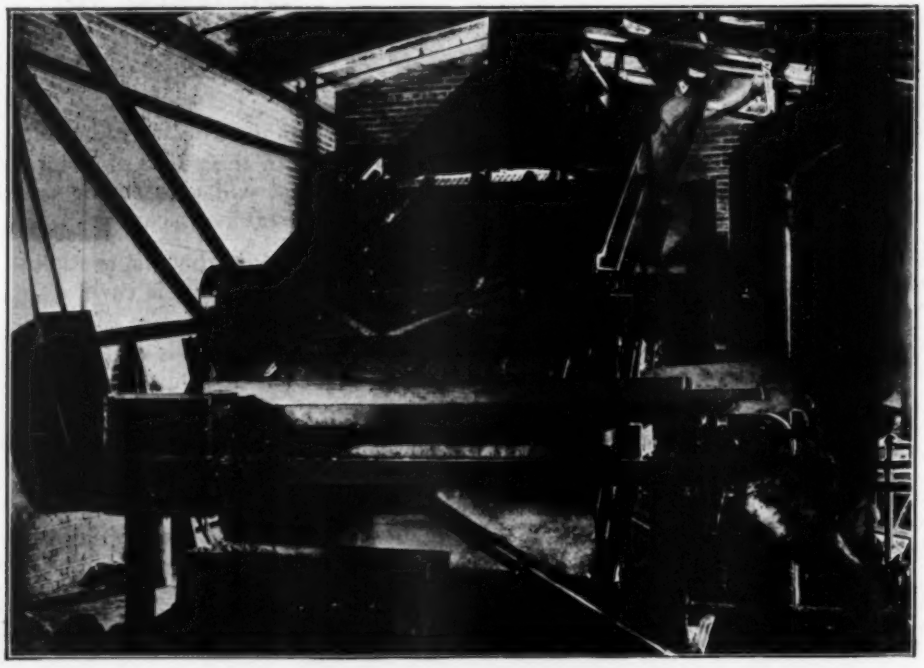
RYTHER AND PRINGLE COMPANY
CARTHAGE N.Y.

RYTHER CHIP SCREEN



INSTALLATION SHOWING ARRANGEMENT OF MAIN CHIP SUPPLY SPOUT—REJECT CONVEYOR DUST CONDUCTOR—SCREENED CHIP CHUTE

CAPACITY 15 CORDS PER HOUR—2 HORSE POWER

FOR CANADA REFER

CANADIAN INGERSOLL-RAND COMPANY, LIMITED

10 PHILLIPS SQUARE, MONTREAL, P. Q.

bentures of the Anglo-Canadian Pulp and Paper Co. This is the balance of a total authorized issue of 3,000,000 pounds, 1,800,000 pounds of which was issued to the public and heavily oversubscribed just a year ago. The debentures were placed at 103 per cent.

A report recently circulated to the effect that a group, including Senator Belcourt, Hon. L. A. David, W. K. Baldwin, M. P., F. B. Brown, G. S. Balfour and O. Lefebvre, was planning to build a 100-ton paper mill at Amos, has been denied by those in question.

Gunnar Niklasson, who has been connected with Canada Paper Co., at Windsor Mills, during the past year, will go to Bogalusa this month, where he will have charge of the experimental research laboratory, equipped with a 30-inch paper machine. Before his connection with Canada Paper, he was superintendent of Western Quebec Paper Mills, St. Andrews East.

John Wostenholme, managing director of Chas. Walmsley, of Bury, England, has acquired control of the company through the purchase of stock lately held by Sir W. G. Armstrong-Whitworth & Co., Ltd. This development will have no effect on the organization or operation of the Chas. Walmsley & Co. Canada), Ltd., which will continue as the representatives of the English firm on this side.

Under the terms of a judgment rendered recently by Mr. Justice Mercier, the Laurentian Lumber Co., Montreal, was ordered to pay R. G. McClellan, an Ontario lawyer, $15,000, representing commission on the sale of timber limits, on the Upper Ottawa, valued at $300,000.

R. N. Norris, managing director of the Harland Engineering Co., of Canada, Ltd., sailed from Quebec on July 6th on the S. S. Empress of Australia. He will be in Great Britain for two or three months, combining a business and pleasure trip.

Ground has been broken at Murray Bay for the construction of a paper mill. The new buildings will house the newsprint machines to be brought from the Tidewater Paper Mills, at Brooklyn, N. Y. This new mill will be an extension of Donohue Brothers pulp mill, which formerly sold its pulp to the Tidewater mill. The latter has been idle for some months, pending the change, and the Murray Bay mill is storing pulp.

T. Hogan and Clarence K. Streit, of New York City, recently spent a few days at Grand'Mère, taking moving pictures of the various operations in the Laurentide mill for the Pathé News Corp.

ONTARIO

Great Lakes to Build Mill

E. W. Backus, of the Great Lakes Paper Co., was in Fort William recently, accompanied by J. T. McLellan, general manager of construction. Mr. Backus conferred with the civic authorities and announced that work on the newsprint mill will begin at once. Mr. McLellan will spend a considerable portion of his time in Fort William until the mill is completed. The ultimate size will be such as the Ontario Government directs, and the first building will have 250 tons' capacity.

The initial unit to be put in operation next summer will have a capacity of 100 tons daily. Other units will be added as the provincial authorities direct, and Mr. Backus intimated that the ultimate tonnage would probably be some 550 tons.

At the recent annual meeting of the Pacific Burt Co., Toronto, of which S. J. Moore of that city is president, W. N. McLeod, secretary of the company, was elected a member of

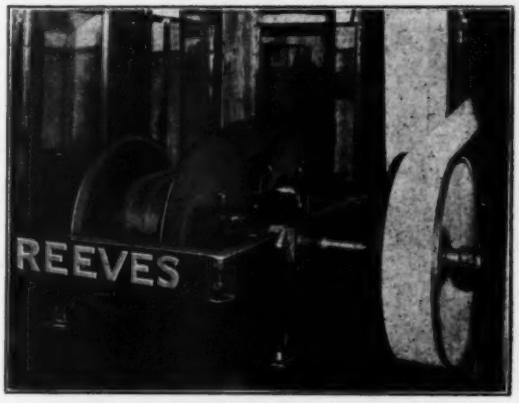


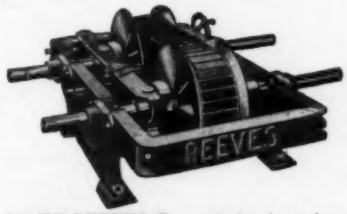
Photo shows a REEVES Transmission which operates a 79-roll loft drier at the Gilbert Paper Co., Menasha, Wis.

Accurate Control for Uniform Production

ANYTHING from tissue to wrapping paper can be made on machines driven by the REEVES Variable Speed Transmission, and each grade of stock will be uniformly high grade. The REEVES gives the fine, steady, accurate graduations of speed which enables you to run your machinery at just the right speed always for any different weight.

On fourdrinier and cylinder machines, on cutters, winders, slitters, and on pasting machines, the REEVES Transmission will eliminate waste and increase your production efficiency. Our catalog A-66 gives full information about the uses and advantages of the REEVES in the paper industry. Write for it today.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission

COUNTER ROLLS

RIGHT OFF THE END OF YOUR PAPER MACHINE

For cleanly cut, accurately wound counter rolls, right off the end of your paper machine let us install a CAMACHINE 18. It will slit and wind counter rolls dependably and well. It will keep ahead of your paper machine, whatever its speed, when running 9 inch diameter rolls with frequent changes of slitting width. In a word--for counter rolls--a CAMACHINE.

Our liberal sales policy will permit your trying out a CAMACHINE for 30 days without obligating yourself to buy, so give us the opportunity of proving to you that CAMACHINES are all we claim them to be.

CAMERON MACHINE COMPANY
61 POPLAR STREET, BROOKLYN, N.Y., U.S.A.

the board of directors, succeeding H. T. Scott, who retired. The shareholders were informed that the new Los Angeles plant had been started up.

Dr. C. D. Howe, dean of the Faculty of Forestry of the University of Toronto, has been appointed chairman of the new Ontario Forestry Board. C. R. Mills, assistant forester of the Department of Forestry, Queen's Park, will be permanent secretary of the board.

S. R. Stilt, until recently mill manager of the Niagara Falls division of the Kimberly-Clark Co., was recently appointed manager of the Spruce Falls Power and Paper Co.'s mill at Kapuskasing.

The Lakehead Timber Co., Ltd., of Port Arthur, was recently incorporated with a capital of $40,000, to conduct a general lumbering and pulpwood business.

Campbell-Wallberg Case

Pleadings have been filed at Osgoode Hall, Toronto, in the action in which Charles E. Campbell, of Vancouver, publisher of the Edmonton Bulletin and Calgary Albertan, is plaintiff in a claim for $1,200,000 against E. A. Wallberg of Toronto, and the Lake St. John Power and Paper Co., of Dolbeau, Que.

Campbell alleges that Wallberg, who is president of the defendant company, promised him commission on all sales of newsprint resulting from introductions by him. He claims that as a result of introducing Lester J. Clarke, president of the Newspaper and Magazine Paper Co., of New York, that company entered a contract for 60,000 tons of newsprint a year for 10 years, the value of which would be about $40,000,000.

As a result of developments in the pulp and paper industry at Port Arthur, the Canadian National telegraph line in the north end of the city will have to be transferred to adjoining property. In this connection, also, the Canadian National Railways are arranging facilities to provide additional spur lines to serve the two paper mills at the north end of the city, in addition to any other industry that may locate there in the future.

The Hinde and Dauch Paper Co.'s 50-ton strawboard mill at Trenton started operations towards the middle of last month. About 60 persons are employed.

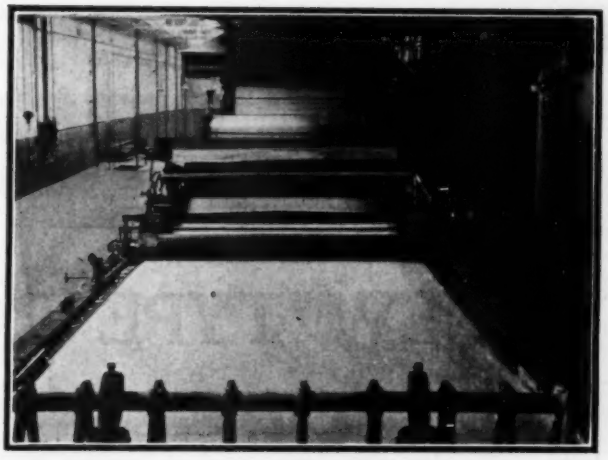
Thunder Bay Mill Starts First Machine

The first paper machine to be installed in the plant of the Thunder Bay Paper Mills, at Port Arthur, a subsidiary of the Consolidated Water Power and Paper Co., of Appleton, Wis., was placed in operation on July 15th. The machine, which was constructed by the Beloit Iron Works, is one of four to be installed at the mill within the next few years. It turns out a trimmed sheet 230 inches wide and will operate at a normal speed of 1200 feet per minute, turning out 125 tons of newsprint a day.

The second paper machine is to be 11 inches wider than the first one. A special celebration was held at Port Arthur in honor of the starting up of the paper mill, at which were present president G. W. Mead and other officials of the company.

Walter E. Booth, of Toronto, has taken out a writ against the Provincial Paper Mills, Ltd., and is seeking to have the sale of the assets of that organization to Provincial Paper, Ltd., set aside. Mr. Booth asked for an interim injunction to restrain the company from disposing of its assets.

A provincial charter has been granted to the Northern Paper Mills, Ltd., with a capital stock of $100,000 and headquarters in Sault Ste. Marie. The new company is a subsidiary of the Northern Paper Mills, of Green Bay, Wis., and for the present



UNIFORM DE-WATERING

means better paper!

AN essential feature in the manufacture of high quality paper is the uniform removal of the water from the pulp as it passes over the Fourdrinier Wire.

Not only must every opening in the wire be accurate, but the whole wire must run flat and smooth so that the stock can be distributed in an even layer over the entire wire.

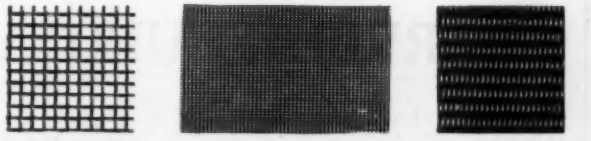
To assure uniform de-watering, Tyler Fourdrinier Wires are woven with extreme accuracy and firmness.

There are no enlarged meshes through which an excess of water can escape. Neither are there uneven spots where the stock can collect.

The Tyler double-crimp feature of weaving, and the special composition wire used, both contribute to a wire which can be depended upon to run straight and true.

Paper mills are assured of uniform de-watering with Tyler Fourdrinier Wires.

The W. S. Tyler Company
Cleveland, Ohio

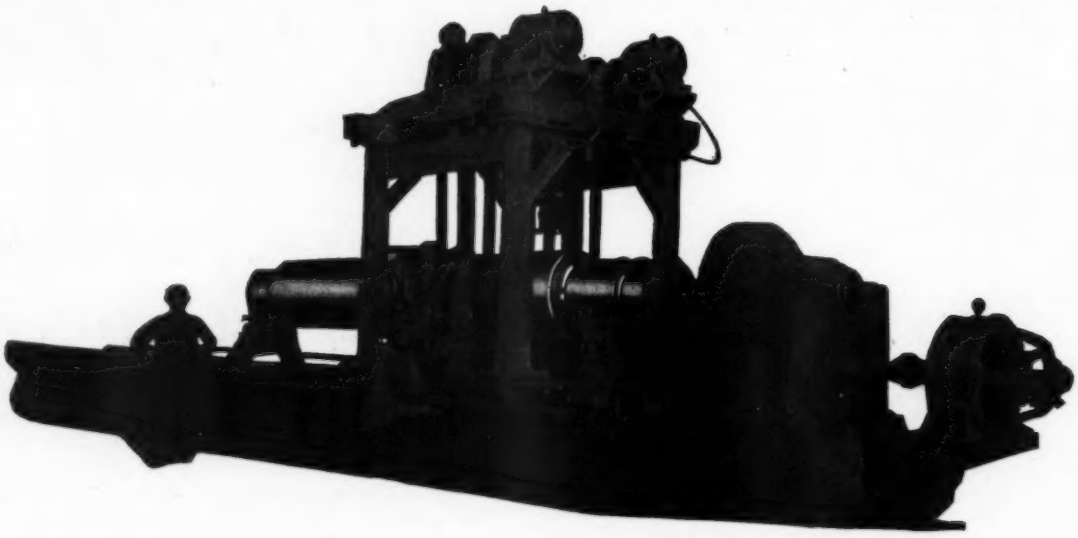


Backing Wire Fourdrinier Wire Corduroy Wire Cloth

TYLER FOURDRINIER WIRES

FARREL

NEW TYPE ROLL GRINDER



FARREL 36" NEW TYPE ROLL GRINDER

These machines are also built in 24", 32" and 42" sizes, all with

NEW CROWNING DEVICE, GEARED HEAD AND AUTOMATIC LUBRICATION

FARREL CALENDERS AND ROLLS

are made in all sizes, including the largest ever made

MACHINERY BUILDERS SINCE 1848

Seventy-Nine Years Experience

FARREL FOUNDRY and MACHINE CO.

Established 1848

ANSONIA, CONN.

Branch Plant: BUFFALO, N. Y.

will be occupied with the business of getting out pulpwood from its timberlands, which are located along the Algoma Central Railway. The officers of the Canadian company are practically the same as those of the Green Bay concern.

It is understood that the Ontario Pulp and Paper Makers' Safety Association has appointed an Employers' Committee to deal with various matters necessary to be taken up with the Workmen's Compensation Board of Ontario, relative to accidents. The accident record in the industry is considered as showing a gratifying improvement. It is the intention of the Association to engage more intensively in the "group" mode of accident prevention competition.

MANITOBA

Manitoba's Second Machine Started

The Manitoba Pulp and Paper Co. have put into operation their second machine, doubling the capacity of their mill at Pine Falls. In future both machines will be in operation continuously, according to C. C. Irvine, general manager.

The total capacity of the mill is now 250 tons of newsprint per day. Manitoba's first paper mill has proved to be a great success. The output is sold by the Canadian Newsprint Co., of Montreal, and is practically all marketed in the Middle West of the United States.

BRITISH COLUMBIA

Port Mellon Kraft Mill Started Again

The sulphate fiber mill of the Howe Sound Pulp and Paper Co., at Port Mellon, which has been idle six years and was involved in the liquidation of the Home Bank of Canada and of the Howe Sound Pulp and Paper Co., former owners, is once more in operation. The mill was bought outright by the Vancouver Kraft Mills, Ltd., an offshoot of the Columbia River Paper Co., of Salem, Ore. F. W. Leadbetter, president of the Columbia River Paper Co., is also president of the newly organized company.

Trygg Iverson, formerly with the St. Maurice Paper Co., supervised the renovation of the plant, and has practically completed the difficult task of "tuning up" the mill after its protracted shut-down. The capacity of the mill is 35 tons of kraft pulp daily. As the timber holdings of the Home Bank did not go to the Leadbetter interests, pulpwood will be bought in the open market.

Expansion Projected at Beaver Cove

Canadian Forest Products, Ltd., of which Cyrus McCormick, Jr., of Chicago, is president, has engaged a prominent firm of engineers to make a complete survey of the water power possibilities at Nimpkish River, with a view to enlarging the 40-ton sulphate mill at Beaver Cove.

It is proposed to expend between ten and fifteen million dollars in the construction of a large pulp and paper mill, the extent of the development depending on the amount of power available from the Nimpkish River. These announcements were made at the recent annual meeting of the company.

Australian Agreement Stimulates Trade

The newsprint mills of British Columbia have been greatly aided by the operation of the Australia preferential trade agreement. Before this came into effect exports of newsprint from Canada to the Antipodes had been almost reduced to the vanishing point, but since then there is a different story to tell.

Producers in the Pacific Coast Province estimate that Canada will sell about 50,000 tons of paper to Australia this

BOWSER

No more trips to the graveyard!

Gears require real lubrication; those that aren't adequately lubricated go quickly to the graveyard; occasional daubing with grease won't do.

Gears that are *thoroughly* lubricated last almost indefinitely.

And, today Bower can offer a system for lubricating gears *thoroughly;* a system built around our Fig. 801 Lubricator-Pump, as illustrated.

With every stroke of the plunger in this pump, a predetermined amount of lubricant (grease or heavy oil) is forced into a bearing or on the gears. "Infallible lubrication"—that's exactly what this new Bowser system offers. The system is simplicity itself.

No forgetting, no waste, and no dry gears or bearings—that's the Bowser guarantee for this newly-perfected system. It is particularly adapted to the use of dryer drives and open gears.

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LUBRICATION ENGINEERS AND MANUFACTURERS
FORT WAYNE, INDIANA, U.S.A.

LUBRICATORS-OIL FILTERS-OILING SYSTEMS-ACCESSORIES
OIL STORAGE AND DISTRIBUTION SYSTEMS

"American Locomotive Crane belonging to the Nekoosa Edwards Paper Co."

"AMERICAN" Locomotive Cranes Cost Less to Keep In Running Order

That's a rather blunt claim, but it is fully supported by the repair records of scores of cranes in service. Take the traveling mechanism, for instance—; the "AMERICAN" automobile type transmission insures smooth, powerful traveling—even over bad track. It is free from the rapid deterioration of chain gear transmissions. The traveling gears are fully enclosed in dust and dirt proof gear cases. This saves the gears from the abrasive action of grit from the roadbed and also permits thorough lubrication.

Switching cars is one of the things the "AMERICAN" Locomotive Crane does best. It is not uncommon for it to move from 8 to 10 loaded cars on level track, or 12 to 15 empties.

Would you like a copy of the "AMERICAN" Locomotive Crane Book for your files?

AMERICAN
HOIST & DERRICK CO.
Saint Paul, Minn.
New York, Chicago, Pittsburgh, Seattle, St. Louis, New Orleans

year, and of this amount British Columbia mills, particularly Pacific Mills and Powell River Co., will account for 35 per cent. Both of these concerns are shipping to Australia at present at the rate of about a thousand tons a month.

Reginald M. DeCew, who has been chemist at the Powell River Co.'s mill, Powell River, has become assistant superintendent of the Port Alice mill of the British Columbia Pulp and Paper Co. Mr. DeCew was formerly night superintendent of the Kenogami sulphite mill and later was associated with Process Engineers, Inc., of New York.

NEW BRUNSWICK

The Bathurst Co., Ltd., is reported as ready to sell about 25,000 h. p. under its new development plan on the Nepisiguit River, intending to use about 15,000 h. p. for extension of its own pulp and paper making activities at Bathurst.

The Fraser Companies, Ltd., have acquired the interests of the Richards Manufacturing Co., consisting of some 496 square miles of Crown lands on lease.

Charles E. Clowes, Ltd., was recently granted a charter with a capital stock of $20,000 and head office in Maugerville, Sunbury County, to carry on a general pulpwood and lumbering business. The company will not at the present greatly extend its activities, but will expand as conditions warrant.

It is stated that the New Brunswick mill of International Paper will likely be located at Dalhousie owing to natural harbor advantages. Negotiations for the necessary waterfront property are under way, and visible progress should shortly be in evidence.

The recommendations of the Royal Commission, which last winter investigated conditions relating to the lumbering business in New Brunswick, have been adopted in the matter of stumpage rates, and the new schedule gazetted a few days ago.

Grand Falls Project Progressing

Construction is progressing on the Grand Falls, New Brunswick, hydro-electric development of Saint John River Power Co. Work has been begun on the forms for the concrete lining of the pressure tunnel, and on the west end of the cofferdam for the main dam. Preliminary work has been started on the erection of steel penstocks.

The hydro-electric plant will be the largest power development in the Maritime Provinces of Canada. Three units of 20,000 h. p. each will be installed initially in the powerhouse.

All of the common stock of Saint John River Power Company is owned by International Paper Company.

Forest Research to Be Discussed

Two topics of special interest are scheduled for discussion at the forthcoming meeting of the New York Section of the Society of American Foresters at Cranberry Lake, N. Y., August 29-30, 1927. One is a plan for the formation of a corporation to bring about the planting of spruce trees and other pulpwood species on abandoned farm lands in New York and Pennsylvania.

A comprehensive plan drafted by the forester of one of the larger pulp and paper companies will be discussed. The other topic of discussion will be the McSweeney bill which is designed to secure the economical conduct of forest research in the Department of Agriculture. This bill is of particular interest to the pulp and paper industry because of the importance of forest research.

Effective August 6, Hercules Powder Co. announces carload price F. Wood Rosin is $81.00 f. o. b. southern shipping points.

RYERSON

Immediate Shipment from Stock

Bars, Shapes, Structurals, Rails, Plates, Sheets, Rivets, Bolts, Nails, Wire, Chain, Turnbuckles, Shafting, Boiler Tubes, Boiler Fittings, Corrugated Sheets, Concrete Reinforcing, Welding Rods, Babbitt Metal, Tool Steel, Bar Iron, Refined Iron, Floor Plates, Safety Treads, Small Tools, Machine Tools, etc.

Write for the Journal and Stock List—the "key" to Immediate Steel.

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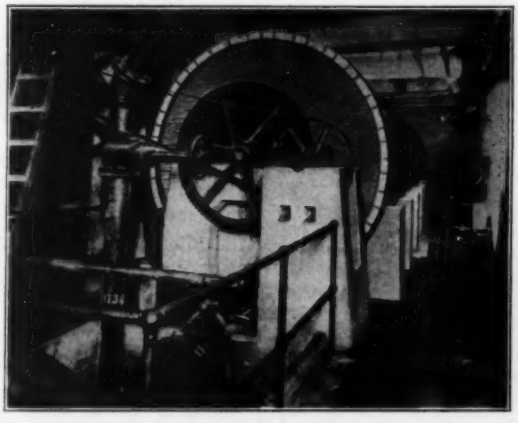
STEEL



Paper Mill Tanks

The above installation in a well-known Ohio paper mill is only one of Hauser-Stander's successful installations.

Hauser-Stander has been building tanks for over fifty years and has particular knowledge of paper mill men's requirements.

The Hauser-Stander Tank Co.
CINCINNATI, OHIO

REED SPAFFORD

Pulp Screen

WHAT DOES YOUR **POWER** COST YOU

UNHEARD OF LOW **POWER** PER TON

HALF **POWER** SAVED

VERY LARGE CAPACITY

VERY LIMITED FLOOR SPACE

OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

BRITISH CORRESPONDENCE

Present Trade Conditions

Markets for the British paper industry have been slow since Easter, and there seems to be little sign of any real recovery for some time. The mills which are directly associated with a paper-consuming business are the only ones that are in a really satisfactory position at the present time. Most of the leading newspapers now own one or more paper mills each, and keep them fully occupied with the manufacture of newsprint. The combine under the control of Mr. William Harrison is still growing and is another instance of the working for closer relationships between makers and consumers. In the big newspaper combines we have a movement to secure and to safeguard a continuity of supplies, and in the case of a paper-making combine, a desire is demonstrated to secure an outlet for production, and the Inveresk group now has a finger on the pulse of both supply and demand.

To quote from a speech by Mr. William Harrison at an informal meeting of the preference shareholders of the International Pulp and Chemical Co., Ltd., held in London on June 28, to explain an offer being made for the acquisition by the Inveresk Co. of all the shareholdings in the former company: "Today the Inveresk Paper Co., Ltd., is no longer simply a paper-making company, but in a sense a great industrial trust company, owning and operating many businesses ancillary to paper-making. We hold vast concessions of esparto grass lands in Northern Africa, while in Germany, through the Koholyt interests, we have what I am firmly convinced are the finest pulp mills in the world. We have chemical works capable of producing all the liquid chlorine we require for bleaching purposes. At the other end of our enterprise, throughout holdings in a great group of illustrated newspapers which we purchased last year, and through other channels, we have a steady market and output for some of our products."

Some of the other mills with steady specialty business, such as those manufacturing insulating and cable papers, educational papers, and so on, are also running at full capacity. More of the mills, particularly those which are working on more satisfactory conditions, are keen on branding their various lines, and those who have overhauled their selling organizations, and put them on a modern working basis are now reaping their reward.

In the newsprint section, home and foreign demands have dropped slightly, and foreign competition is still severe, a slight increase being shown in imports.

Australian figures have still been maintained, but there has been a slight drop in exports to New Zealand, and to all other countries to which newsprint is sent. In the esparto section, conditions are only moderately satisfactory, the bulk of the trade is still being done by a few of the better-equipped mills. Export inquiries are below normal. There is a lull in demand in the woodfree section, and a distinct increase in papers imported from the Continent is reported. Wrapping paper mills are also receiving less business; but, owing to the tariff on imported wrappings, those of foreign production are definitely on the wane. Fine paper manufacturers are more satisfied with business, there having been a slight increase in inquiries for the more popular papers. Hand-made mills report no change in business, the demand being merely steady. Export inquiries are below normal, but there is an increased interest being shown in special lines.

The following tables show a comparison of values between paper and paper-making materials imported in June, together with the increases and decreases as compared with the corresponding months for the two preceding years.

	June, 1927	Increase (+) or as compared with 1926	Decrease (—) as compared with 1925
Paper-making materials	1,002,344	—310,696	+14,931
Paper and cardboard	1,355,139	+5,579	+198,355

Variable Speeds in The Paper Industry

Variables in the processes producing paper demand variable speed machinery. To enable the operator to secure the speed best suited to the changing conditions use a LEWELLEN VARIABLE SPEED TRANSMISSION. LEWELLEN is solving the problem of variable speed on the following:

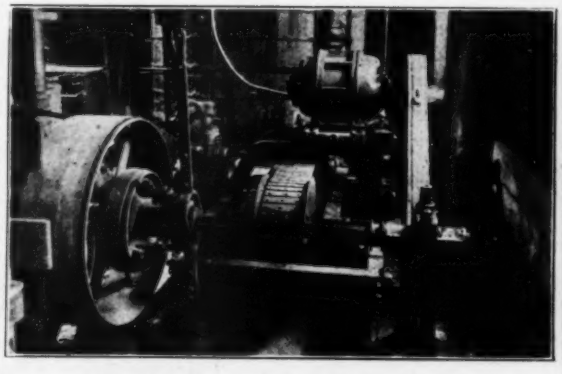
Coaters, conveyors, box making machinery, embossing machines, creping machines, paper machines, winders, pumps, binder board machines, sheet dryers, festoon dryers, supercalenders, sheet cutters.

LEWELLEN is solving these problems because behind a soundly designed transmission of guaranteed structural quality is experience.

We have recently issued a catalog describing the Lewellen Variable Speed Transmission in detail. Just a card will bring a copy.

LEWELLEN MFG. CO.

Columbus, Indiana



Above photo shows a Lewellen No. 15, Class "H" Complete Ball Bearing Transmission driving a binder board machine at the Kerr Paper Mills, Downingtown, Pa.

LEWELLEN Variable Speed TRANSMISSION

PACKAGE AND PARCEL

WHETHER it be package or parcel the INDUSTRIAL crane is a handy helper. The halftone shows an INDUSTRIAL piling lumber by the package method. The gooseneck boom enables the operators to handle the package over two sets of tracks or over cars if necessary.

Where pulpwood is to be handled there's nothing like a wood grapple. For handling finished paper to the cars, the hook and block and slings may be used very advantageously.

Prominent paper mills all over are enjoying increased profits through the use of INDUSTRIAL cranes.

(Where there's money to be made—INDUSTRIALS make it.)

Get in touch with our nearest branch and see how an INDUSTRIAL crane can boost for you. Write or call now.

Crawling Tractor Cranes, Shovels, Draglines, Locomotive Cranes, 5 to 75 tons, Wrecking Cranes, 75 to 200 tons, Freight Cranes, Transfer Tables, Railsaws, Pile Drivers, Clamshell Buckets, Steam Pile Hammers.

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Philadelphia, Pa. Packard Bldg. — Pittsburgh, Pa. Federal Reserve Bldg. — San Francisco, Calif. Monadnock Bldg. — St. Louis, Mo. Railway Exchange

	June, 1925	June, 1926	June, 1927
Wood pulp, tons.....	112,466	159,611	124,137
Paper, cwt. 1,117,850		1,316,820	1,451,003

while the undermentioned figures show the same relative comparisons for exports:

	June 1927	Increase (+) or as compared with 1926	Decrease (—) as compared with 1925
Paper-making materials.	109,243	—7,685	—41,603
Paper and cardboard....	670,414	+51,508	—35,326

	June, 1925	June, 1926	June, 1927
Paper-making materials, tons	14,660	12,451	13,490
Paper and cardboard, cwt.	336,491	282,154	295,804

Raw Material Problems.—At the annual meeting of the Society of Chemical Industry, held last week at Edinburgh, the need of finding fresh sources of raw materials for fibers, due to the rapidly increasing consumption and possible exhaustion of woodpulp, was aptly brought out and emphasized. A paper read by Messrs. C. T. T. Fox and L. Hall of the Cross and Bevan Laboratories, aroused much interest. The following is a short quotation:

"The increasing use of wood in industry, including the timber trades, is now raising difficult questions of forestry economics and afforestation, which appear likely to be essential factors in future development; it is only necessary to remark here that good afforestation should be able to increase the supply more rapidly than the demand, especially of the spruce, which is a fairly quick grower. Another quick grower is bamboo, the use of which has been studied especially by Raitt for some years, and which, in the event of a real shortage, might supplement the use of wood, and even compete with it. It is known that there are about 2,000 species of plants which are possible sources of usable fibrous raw material; very few of them have, however, actually become of industrial importance apart from local use by native craftsmen."

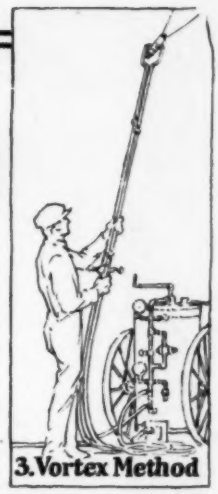
Raitt Talks on Bamboo

By a coincidence, Mr. Raitt, who is now on a visit to England from India, a few days ago met the Technical Section of the Papermakers' Association in London, and gave a very encouraging account of the researches he had been conducting for some years into the practical commercial use of bamboo pulp for paper-making. To quote from *The Newspaper World:*

He first of all referred to the fact that the present annual cut of timber is four times the annual growth, also that other industries besides paper-making—box-making, artificial silk, and explosives—are making use of wood-pulp to an ever-increasing extent, and that the biggest competition of all is to be found in the enormous expansion of the demand for sawn timber. The saw-mill is now a better market than the pulp-mill, and rightly so, as it can make a more economical use of the raw material. We are forced to recognize that in the future the pulp-mill will only exist as the hand-maid of the saw-mill, thankfully using its rejections, a position that the paper-maker cannot afford to regard with equanimity. Re-afforestation is not going to help, for the planter, having waited sixty years for his forest to grow to wood-pulp size, will carry on for another twenty for it to reach saw-mill value. The provision for future expansion is to be found in the boundless areas in the tropics and sub-tropics stocked with species producing annual crops, so that mills have supplies in perpetuo at their back doors, and with perfect natural systems of water transport both in and out of the factory.

Objections to Bamboo.—One objection that has been raised to bamboo by the paper-maker is that it will not produce mechanical pulp. This is perfectly true . . . its range is that of chemical pulp, and even the makers of newsprint use up nearly two million tons of this per year. The first difficulty in the production of bamboo pulp was that certain constituents of bamboo, which must be eliminated in the

3 ways to PAINT



1. Brush 2. Ordinary Gun 3. Vortex Method

Have you overlooked the Quick Economical Way?

THERE are three kinds of large area painting—[1] brush painting, [2] gun painting, [3] Vortex painting.

The Vortex equipment excels the ordinary gun, just as much as such a gun excels the brush in speed and economy.

Vortex equipment is not sold. It is furnished without cost to users of Vortex paint.

Painting Equipment is Loaned

Vortex paint is fine paint, prepared for every variety of painting equipment. But we just naturally like to help solve your problem—to make it easy for the paint to get where you want it—on the wall. The coupon below is your key to better and more economical painting.

THE VORTEX MANUFACTURING COMPANY
1981 West 77th Street . . . . Cleveland, Ohio

Vorcolite

and the VORTEX PAINTING METHOD

Fill out and mail

VORTEX MFG. CO.
West 77th St., Cleveland, Ohio
Please send us check sheet to outline our painting problem. It is on new construction? _____ Buildings already in use? _____
Company _____
Address _____
Attention _____

V-32

So One Thought May Survive

IN a lifetime of painstaking, eye-tiring effort, the medieval monk made a few copies of some precious book whose ideas must be passed on to posterity. Hundreds of things that might now seem to be worth knowing were discarded into an unrecoverable oblivion because the book maker had to limit his copying to the few things he chose as most important.

Today our literature is multiplied, not a letter at a time, but by the carload. Most that is printed is of fleeting value—much indeed, valueless. But among the tons of printing there are passed on, to all who wish to know, the worth-while ideas of the human race, those ideas that may seem of passing moment today only to be judged important by the next generation.

The censorship imposed by lack of paper long held back literature, restricted its quantity, limited its universality. Generous amounts of paper have made possible the presses that imprison the ephemeral thought that some future generation may release for the broad benefit of mankind.

Hammermill Paper Company

Erie, Pennsylvania

ordinary process of pulping with soda, combined with that chemical to produce a very dark brown so that the pulp readily absorbed and that required excessive bleaching to get rid of, resulting in both loss of pulp and strength of fiber in the process. An alteration in the process of manufacture has not only got over this difficulty but has at the same time cheapened the cost of making the pulp.

Experiments on Bamboo.—For the past six years, they had been running an experimental plant, dealing with 25 tons of raw material weekly, on a sufficiently large scale that it both permitted and compelled factory methods. From this they were able to arrive at the cost; Mr. Raitt now considered it possible to deliver unbleached bamboo pulp C. I. F. British ports for £11 10s 0d per ton, which compares very favorably with £13 10s 0d for unbleached chemical wood pulp. In one district of Burma alone, and taking a belt one mile deep on each bank of the rivers, allowing for crop rotation of six years, there is enough bamboo to produce 800,000 tons of pulp yearly. The rivers in question are all raftable and linked up with sheltered waterways and harbors, so that no difficulty would arise in getting the bales away for export shipment. Herein, thinks Mr. Raitt, lies the hope for the future of the paper industry in Great Britain.

MICHIGAN NEWS

Watervliet Host to Cost Body

Harry C. Bradford, secretary of the Rex Paper Co., and Elbert Milham, Bryant Paper Co., were speakers on July 27 before the Kalamazoo Valley Chapter of the Cost and Technical Association of the Paper Industry at the Watervliet Country Club.

Mr. Bradford spoke on "General Budget Systems for Paper Mills," analyzing various financial aspects of the industry, while Mr. Milham spoke on "New Methods of Bleaching in Connection with Costs." About twenty-five were in attendance.

Sutherland Paper Company's first annual picnic held July 9 was an unqualified success and brought out an attendance of between 600 and 700 employees, officials, and respective families.

A fire of unknown origin broke out in the Mac-Sim-Bar Paper Company's stock shed early in the morning of July 30, and was subdued shortly afterwards. Extent of damage has not yet been estimated and will be known only after the paper stock has been moved and inventoried.

Alfred Bryant Resigns

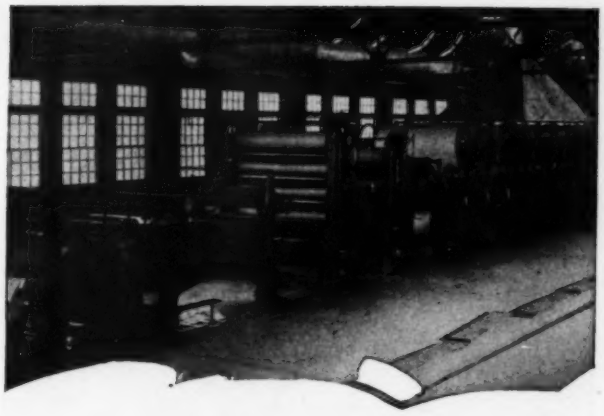
Alfred Bryant, general superintendent of the Milham Division of the Bryant Paper Co., resigned from his position effective July 15. He had been connected with the Bryant Paper Co. for the past twenty-two years.

He sailed for Montreal and from there to England to visit his mother and plans to return and re-enter the paper industry in the fall.

Paul Cheslek, 24, employed at Bryant Paper Co., sustained burns when drawn into the winder of one of the machines at the Milham Division. His injuries are stated to be not serious.

Bryant Marks Thirty-first Anniversary

The Bryant Paper Co., incorporated in 1895, started its first machine thirty-one years ago, and almost a year later, or July 30, 1897, to be exact, placed an order for its second machine. The original manufacturing unit was a 116-inch fourdrinier. The second machine was 124 inches wide. Both were installed in what is the present Bryant division of the company. The three men most actively associated with the establishment of this company, the late Noah Bryant, John



No more felt cleaning troubles

A CERTAIN paper mill was having difficulty in cleaning felts that were badly caked with sizing. The soap and soda ash used for washing them often caused spots of insoluble soap to appear on the felts, resulting in imperfections in the finished paper.

Now, with the aid of Oakite cleaning materials this difficulty has been overcome. Cleaning the Oakite way removes every trace of sizing and other foreign matter, leaving the felt soft and porous. Moreover, the quick action and free rinsing qualities of Oakite save considerable time in cleaning.

If you have a similar or any other cleaning problem, ask to have one of the Oakite Service Men help you. No obligation.

OAKITE IS MANUFACTURED ONLY BY
OAKITE PRODUCTS, INC., 16A Thames St., NEW YORK
(Formerly OAKLEY CHEMICAL CO.)

Oakite Service Men, cleaning specialists, are located at

Albany, Allentown, Pa., Altoona, Pa., *Atlanta, Ga., Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, Buffalo, *Camden, Charlotte, N. C., Chattanooga, Tenn., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, Decatur, Ill., *Denver, *Des Moines, *Detroit, Erie, Pa., Flint, Mich., Fresno, Cal., *Grand Rapids, Harrisburg, Hartford, Houston, Texas, *Indianapolis, *Jacksonville, Fla., *Kansas City, *Los Angeles, Louisville, Ky., *Memphis, Tenn., *Milwaukee, *Minneapolis, *Montreal, Newark, Newburg, N. Y., New Haven, *New York, *Oakland, Cal., Omaha, Neb., *Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, *Rochester, Rockford, Rock Island, *San Francisco, *Seattle, St. Louis, South Bend, Ind., Syracuse, *Toledo, *Toronto, Trenton, N. J., *Tulsa, Okla., Utica, *Vancouver, B. C., Williamsport, Pa., Worcester.

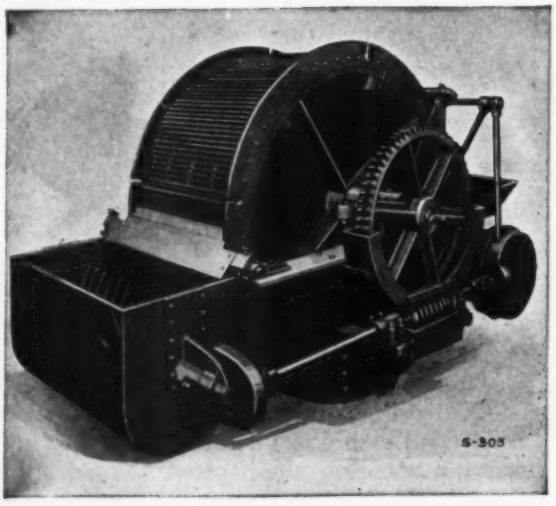
*Stocks of Oakite materials are carried in these cities.

OAKITE

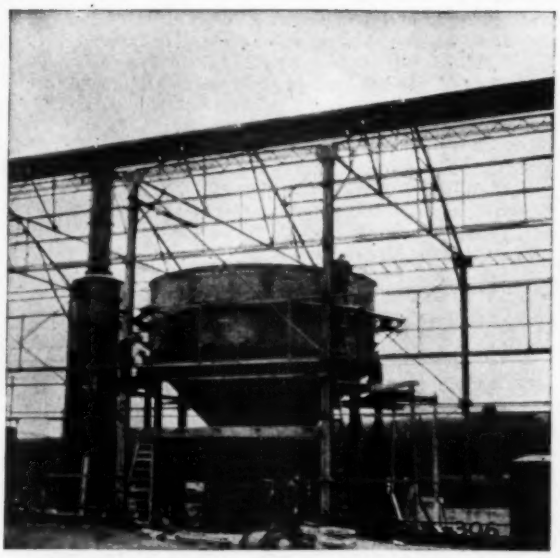
TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

A Complete Reclaiming System



Swenson-Mount Rotary Vacuum Filter with resludger for continuous handling and washing of lime sludge. (Shop view with wire cloth removed.)



View of caustic plant under construction, showing Swenson-Mount Causticizer, Decanter and Lime Kiln.

- Pulp Washing Systems
- Diffusion Washing Systems
- Black Liquor Evaporators
- Black Liquor High Concentrators
- Incinerators
- Leaching Batteries
- Decanters
- Lime Slakers
- Continuous Causticizers
- Lime Filters
- Lime Kiln
- Waste Sulphite Liquor Evaporators
- Electrolytic Caustic Evaporators

THE SWENSON EVAPORATOR COMPANY has for many years manufactured recovery systems for use in Soda and Sulphate pulp mills. With the addition of the Mount line of recovery equipment, the scope of Swenson service to pulp mill operators has been greatly increased. Our engineers will gladly submit layouts and full description of equipment recommended to meet your particular requirements.

See our exhibit at the Eleventh Exposition of Chemical Industries Grand Central Palace, New York, Sept. 26th to Oct. 1st, 1927.

ESTABLISHED 1889

SWENSON

EVAPORATOR COMPANY

(Subsidiary of Whiting Corp.)

Main Office and Works: 15673 Lathrop Avenue, Harvey, Ill. (Chicago Suburb)

Sales Offices in New York, Chicago, Buffalo, Detroit and San Francisco

Mount processes for alkali manufacture or recovery.

Mount vacuum filters.

ESTABLISHED 1889

F. King, and Frank H. Milham, all now passed away. That their initial steps were well planned is demonstrated by the fact that the plant has grown to eleven machines today, and is still growing.

Noah Bryant was the first president of the company. He was succeeded by Milham, who was in power during the greatest period of growth. Upon the death of the latter, Felix Pagenstecher was elected president and still holds that office. It is under his progressive management that the company has been rehabilitated and rebuilt. John F. King, who came to Kalamazoo from Otsego, was originally superintendent of the Bryant Paper Co., left the latter in 1901 to become vice-president and general superintendent of the King Paper Co., now known as the King division of the Allied Paper Mills. King remained with the King Paper division until 1915 and saw the plant have a tremendous growth. He left in the year mentioned to found the Rex Paper Co.

George Pountain Joins Bryant Paper

George H. Pountain, for the past nine years connected with the Monarch and King divisions of Allied Paper Mills, has joined the Bryant Paper Co., as superintendent of the Milham Division.

Mr. Pountain is also chairman of the Michigan Division of the American Paper and Pulp Mill Superintendents' Association and third vice-president of the national organization.

Allied Mills Hold Sales Conference

A successful sales conference for representatives of the Allied Paper Mills and Chicago Paper Co., was recently held in Kalamazoo. Plenty of golf, a banquet and luncheon made the time pass rapidly for the 60 representatives present. Salesmen attended from New York, Philadelphia, Cleveland, Indianapolis, Chicago, Detroit, Cincinnati, South Bend, Ind., and Bloomington, Ill.

W. N. Gillett, vice president of the Chicago Paper Co., spoke on "The Spirit of Co-operation," while Reed Landis addressed the group on the "Merits of Commercial Aviation." There was an inspection trip through the King division of the Allied mills, with luncheon and added entertaining features at the Country Club following.

Standard Company Boosts Dividend Rate

The Standard Paper Co., beginning August 1, went on a 12 per cent dividend basis, payable three per cent quarterly. This is an advance of four per cent from the eight per cent previously paid.

The company has built up a large surplus, the stock now having a book value of $18 per share. Their immense output of small dry cartons go to some of the biggest manufacturers of boxed goods in the country.

St. Joseph Company Files Incorporation Articles

The St. Joseph Board and Paper Co., capital $100,000 has filed articles of incorporation with the Secretary of State. The concern plans to take over the Mullin Brothers mill at St. Joseph and engage in the manufacture of paperboard and wood products.

Those interested in the project are Kirk Sutherland, St. Joseph; Claude E. Nicely and Eugene H. Miller, both the latter of South Bend, Ind. Mr. Nicely was formerly connected with the LaSalle Paper Co., Mishawaka, Ind.

Mill Chemists' Club Meets

The Paper Mill Chemists' Club had a dinner and meeting August 3, at the Columbia Hotel, Kalamazoo.

C. W. Callahan of the Allied Paper Mills gave the evening address. His topic was, "Physical Testing of Paper." About twenty-five members attended.

Oliver Continuous Filter Co., California, London and New York, have been obliged to secure larger quarters for their

Reliable!

Darling Gate Valves are the kind you can install, and then forget. They are built to give year in and year out service.

There is a type and size for every requirement of the paper mill. The name "Darling" on a valve is a guarantee of long life and dependable service.

Catalogue on Request.

"Makers of Valves for the Paper Industry"

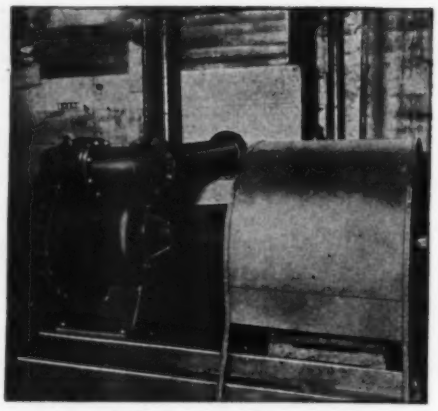
DARLING VALVE & MFG. CO.
Williamsport, Pa.

New York
Chicago

Oklahoma City
Houston

DARLING
GATE VALVES

Light in weight—no costly foundations needed



No. 6 Nash Pump, for taking water from Fourdrinier machine, Consolidated Plant, Wisconsin Rapids

Inspect the Nash Hytor Vacuum Pump from one end to the other, and everywhere you will find a remarkable ruggedness in construction.

Yet, though the Hytor is built to stand up unfailingly in continuous service when working at the maximum speed and pressure for which it is designed, it is unusually light in weight. No costly foundations are necessary. Floor space is saved,—in some instances as much as 30% of that required by reciprocating equipment.

Supplied for removing water and air from flat boxes, screens, suction rolls, felts, dryers and similar equipment.

NASH ENGINEERING COMPANY

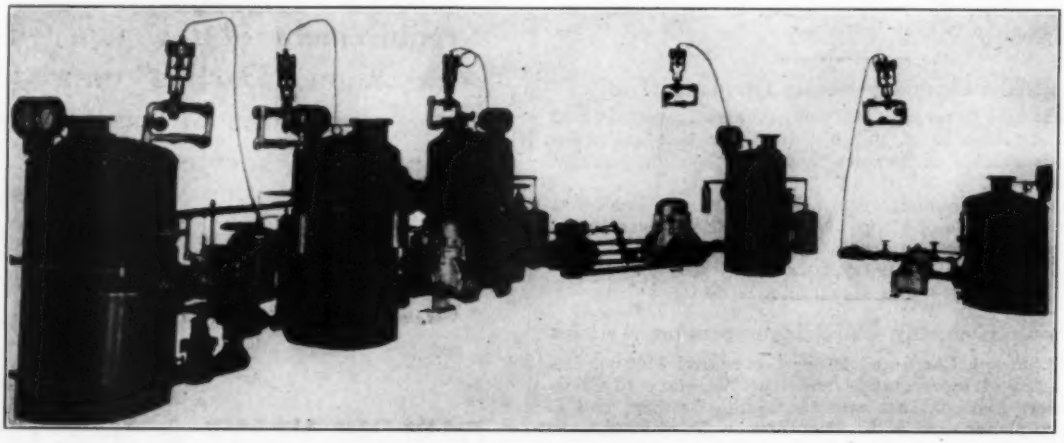
161 Wilson Road — So. Norwalk, Conn.

New England Representative
Mr. G. H. Gleason, Nottingham Bldg., Copley Square, Boston, Mass.

Western Representative
Mr. T. H. Savery, Jr., 80 East Jackson Boulevard, Chicago, Ill.

Nash Hytor

VACUUM PUMPS AND COMPRESSORS



One Shipment

Increased drying efficiency is being secured in paper mills throughout the country with the improved Fulton dryer drainage System. The picture shows five Fulton Circulators ready for shipment. Your drying can be improved by our practical experienced paper mill engineers.

Better sheet—More production—Lower cost

Fulton Engineering Co., Middletown, Ohio

storehouse and laboratory in their New York office, and are now located at 445-457 West 31st St., N. Y. C. Their office space has also been increased at 33 W. 42nd St., N. Y. C.

WISCONSIN NEWS

Nicolet Paper Co. Operating

The wheels of one of the two new machines in the remodeled American Writing Paper Co. plant at De Pere, Wis., operated by the newly organized Nicolet Paper Co., will turn this week in the manufacture of glassine paper.

True to his promise that the mill would be in operation in August, H. C. Hanke, general manager, announced recently that most of the installations had been completed and that the company was ready to start operating one of the machines very soon.

The other will be started before the month is over. The machines were purchased from Rice, Barton & Fales. All new equipment has been installed, the only part of the American Writing Paper Co., machinery to be used being the dryers. Pure water drawn from three wells on the property will be used in the manufacture of glassine and high-grade grease-proof paper.

The forty years' service of Joseph F. Schlegel in the Gilbert Paper Co., Menasha, Wis., was rewarded recently by a handsome gold watch presented by the company.

Nekoosa, home of one of the big plants of the Nekoosa-Edwards Paper Co., will henceforth have adequate fire protection as a result of the decision of the city council to purchase a Seagrave pumper of 600-gallon capacity.

The Chalk Hills power plant of the Northern Electric Co., subsidiary of the Northern Paper Mills, of Green Bay, was opened a few weeks ago on the Menominee River. The output will be about 19,000 h. p. The power plant is of Gothic type architecture. Work is now being concentrated on the second power plant of the Northern Electric Co. It is being erected at White Rapids, on the same stream.

Stockholders of the Moloch Machine and Foundry Co., Kaukauna, manufacturers of paper mill machinery, recently declared its first dividend in the history of the company. It was organized about seven years ago, but a reorganization took place this year.

Articles of incorporation have been filed with the secretary of state at Madison, Wis., by the newly formed Modette Co., Green Bay, capitalized at 500 shares of no par value, and organized for the purpose of manufacturing, buying and selling of pulp and paper. Incorporators are J. M. Conway, Frank T. Ramsay and Eben R. Minahan.

Fifteen public utilities in Northern Wisconsin and in the Upper Peninsula of Michigan were consolidated last month to form what is now known as the Wisconsin-Michigan Power Co. The new company will operate property valued at $16,000,000. Headquarters are established in Appleton, with A. K. Ellis as general manager. The firm is a subsidiary of the North American Co.

Governor Fred R. Zimmermann last month signed the measure passed in legislature to cut down the pollution of streams by industrial plants.

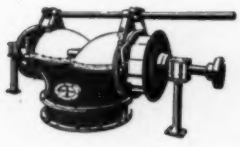
The bridge crossing the Wolf River to the Wolf River Fibre and Paper Co.'s plant at Shawano underwent repairs last month. It was closed to traffic for a few days.

An intensive safety campaign is in progress at the Peshtigo Paper Company at Peshtigo. Under the newly adopted slogan, "Safety Always," all departments are vieing with one another to make theirs the safest in the plant, and the

RODNEY HUNT

Water Turbines
and
Water Power
Equipment

New Mill Type Turbines
Replacements a Specialty



Modernize
Your Water Power with
Rodney Hunt Equipment

Canal Gates — Trash Racks
Hoists — Penstocks
Flumes — Draft Tubes

for

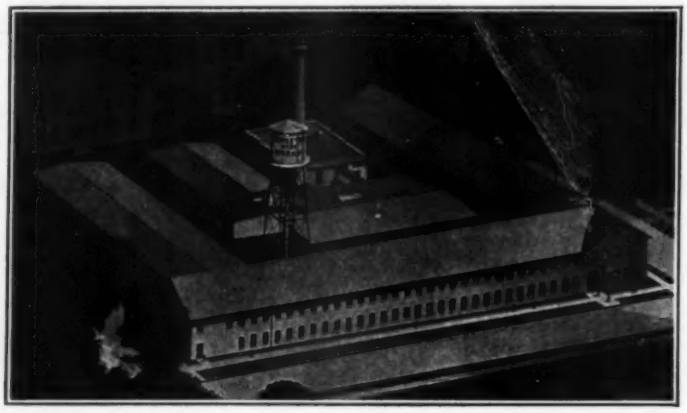
Paper Mill Direct Drives
Hydro-Electric Units

Write or Telephone

Rodney Hunt Machine Co.
38 River Street, Orange, Mass.

RODNEY HUNT

Our Experience of More Than 50 Years is of Value to You



APPLETON WIRES

Fourdrinier Wires
Cylinder Wires
Save-All Wires
Washer Wires

Dandy Rolls and Cylinder Moulds repaired and recovered.

Over fifty years of experience in manufacturing wires for American Paper Makers, and the ever increasing use of APPLETON WIRES testify to their quality.

Appleton Wires
are good wires

APPLETON WIRE WORKS INC., APPLETON, WIS.

entire institution as safe as any paper mill in the country.

Patents have been granted by the United States Patent Office to two Green Bay inventors on devices to be used in paper mills. Peter J. Christman, Jr., treasurer and assistant manager of the Bay West Paper Co., Green Bay, Wis., has a patent on a machine for superimposing paper sheets. Herman W. Krueger, president of the Northern Corrugating Co., devised a new metal dispensing cabinet for paper towels.

A paper converting company under the name of Peavey Printing and Carton Co., of Ashland, Wis., has incorporated with a capital stock of $25,000. The incorporators are W. M. Peavey, H. J. Peavey and Robert G. Reick.

The old Badger Pulp Mill of Kaukauna, Wis., saw its last days recently for the old building was razed several weeks ago in connection with a city project to beautify the banks of the Fox River. The mill was one of the first built in Kaukauna. For a time it was also used by the Kaukauna Pulp Co.

The Byllesby Engineering and Management Co., of Chicago, has purchased the Wisconsin Valley Electric Company, of Wausau, and its subsidiaries. These power companies serve paper mills in the Wisconsin River Valley district.

Study Stream Pollution

The statewide committee of paper mill officials and state engineers appointed to make an extensive study of the stream pollution problems and their solution has made a report on progress of the investigation. Paper and pulp mills in Wisconsin have already spent $500,000 in equipment and $22,000 in research in an effort to minimize pollution.

The committee reported on its findings of pollution in the Fox River near Appleton and in the Wisconsin River above Rhinelander and near Stevens Point. Conditions vary as to resistant organisms in fish life. The committee recommended sewage treatment for pollution from city sewers. To prevent injury from the paper mills, equipment must first be provided to recover fiber waste so that the amount poured into the streams will be harmless, it is said.

Sulphite waste liquor is the main agent in reducing oxygen, and this offers the most serious problem. The committee advises energetic research to disclose a method by which it may be eliminated. The same course is advised with respect to sulphate wastes. Ponding and aeration are counseled, but the report suggests that the solution of the sulphite problem lies in utilization as fuel or in the manufacture of valuable by-products rather than in treatment.

To Teach Papermaking

Harold G. Noyes, of the Department of Pulp and Paper of the Fox River Vocational Schools, Appleton, Wis., announces that the vocational schools of the State of Wisconsin have inaugurated a state-wide program for pulp and paper education. The cities of Appleton, Neenah, Menasha, Kaukauna, Green Bay, Marinette, Wisconsin Rapids, Stevens Point, Wausau, Rhinelander, and Eau Claire will sponsor this program. Mr. Noyes has been engaged to head up the program, which will consist of three major phases: (1) part-time work for boys under eighteen years of age; (2) trade extension work with adults employed in the industry, and (3) teacher training and working with classes in the industry. All this work will be of less than a college grade.

If the plans materialize two instructors will be needed, one of whom will probably be assigned to the Appleton district, and the other to the Green Bay district. Later on after surveys have been completed and class work organized an instructor will probably be placed in the Wisconsin River Valley.

An $18,000 boiler room is to be added to the plant of the Menasha Printing and Carton Co., at Menasha.

Judson G. Rosebush, Appleton, president of the Patten Paper Company, of Appleton, and of the Northern Paper Mills, Green Bay, was chairman of the industrial institute

Ask the Norwood Men

THE Norwood men have been developing and building paper mill machinery for over 30 years. During this time they have naturally acquired a vast knowledge and experience in meeting varied conditions of mill operation.

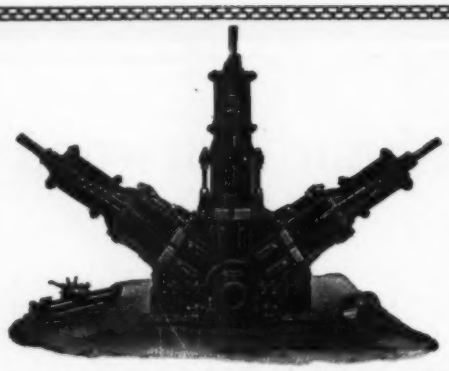
Coupled with this valuable experience has been a constant growing of the Norwood spirit of co-operation —until now these men can offer you the utmost in both experience and whole-hearted co-operation.

The Norwood men are ready and anxious to serve you. If you have a problem dealing with water filtration, or involving calenders, platers, dusters, suction boxes or brushing engines, we suggest that you put it up to the Norwood men.

And of course if you are thinking of replacements or additional equipment we know it won't be necessary to tell you that Norwood equipment will give you long, dependable and economical service.

Catalogs, Photographs, Specifications, and expert engineering assistance will be gladly furnished.

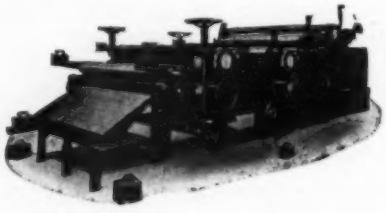
NORWOOD
Engineering Company
Florence, Mass.



Standard Wood Pulp Grinder

Built in Three Sizes

Taking wood 24", 30" or 32".
Bridge-trees—Are well proportioned.
Flanges—Made of steel, 40" diameter.
Hydraulic Cylinders—Copper lined, 12", 14" or 16" diameter. Valves are quick acting and leak proof.
Pillow Blocks—22" length of bearing.
Pockets—Very heavy, designed particularly for free discharge of pulp, and fitted with our RENEWERS.
Service—Continuous distinctive service is always assured.



Rogers and Special Wet Machines

The standard machine for producing high density laps continuously.

When dry stock is not desired, use it as a labor saver—one man can run it and handle a tremendous daily capacity.

The Single Press may be used for the same purpose.

A true Glens Falls product, our new

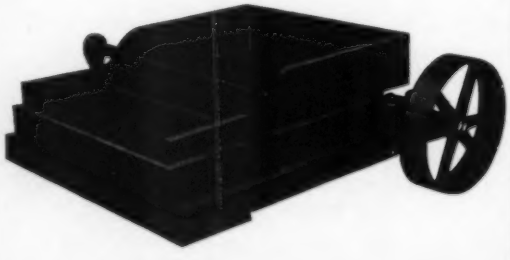
DEWATERER

(Patent pending)

Efficient Simple

This long sought machine will deliver chemical pulp from 15% to over 25%, as you may desire. It is entirely self contained, requiring no prethickener or vacuum pump. The flake form in which the stock is delivered is ideal for bleacher, beater or storage. Figures of our trial run are available at your request.

We have an attractive offer to make to you—you take no risk



Wells Undulating Knot and Sliver Screen

Gentle action assures high quality.
Simplicity means low upkeep and low selling price.
And you can SEE it all the time.

Ask Us for Quotation and Recent Purchasers

PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

See pages 342 to 343 in the 1927 Paper and Pulp Mill Catalogue

conducted by the State Y. M. C. A. at Lake Geneva, Wis., this summer. Mr. Rosebush was formerly national president of the Y. M. C. A.

Nekoosa to Build Addition

The Nekoosa-Edwards Paper Co. is building a finishing room at Port Edwards to cost approximately $160,000. It will be known as the John Edwards Finishing Room Extension. The addition will be 160 by 180 feet, and will be completed by October 1. It will be used for the finishing of all grades of paper, and the basement will be devoted to storage purposes.

Two three-ton cranes will be installed. An increase in production has made the addition necessary. A fourth digester has been installed in the Port Edwards mill, thereby increasing the capacity by twenty tons.

The present force of 110 men employed by the Moloch Foundry and Machine Co., Kaukauna, is being enlarged to keep pace with an increase in orders.

Considerable progress has been made by the La Crosse Paper Box Co., La Crosse, Wis. The company has kept pace with the rapid improvements in paper box manufacturing machinery. Straw board has been practically abandoned in favor of chip board because of the economy effected, it has been announced.

George A. Whiting, president of the George A. Whiting Paper Company, Menasha, has been elected a member of the board of trustees of Ripon College.

The Menasha Paper Roll Plug Co. has awarded a contract to erect a new saw mill which will have a capacity of 18,000 ft. per day.

Fox River Paper Co., Appleton, is spending approximately $20,000 in improvements and repairs this summer. The roof of a machine room will be replaced, a brick wall and several small additions will be built.

Roy J. Rada Co., Inc., is the name of a wholesale paper company that has incorporated at Milwaukee. Incorporators are Roy J. Rada, B. E. Morgan and Irene C. Morgan.

The future of supply of raw material for Wisconsin paper mills begins to look brighter with the passage of a bill in legislature reorganizing the conservation commission on a non-political basis and passage of a bill reducing taxes on woodlands. The latter was made possible through an amendment to the state constitution which was voted by the electors this spring.

A big Labor Day celebration will be held by Kimberly-Clark Company at Niagara, Wis., for employees of its various mills. Transportation will be provided.

Appleton Wire Works is erecting an $18,000 addition to its plant. Purchase of new property on which the addition will be located now gives the company the entire block.

First paper was produced last month by the new plant at Port Arthur, Ontario, of the Consolidated Water Power and Paper Co., Wisconsin Rapids. The big machine is one of the largest in the world, with a trimmed sheet 230 inches wide, and a speed of 1,200 feet per minute, plus a capacity of 125 tons or more of newsprint per day.

The regular summer outing of the Metropolitan Bag and Paper Jobbers' Ass'n will be held this year at Lindenhurst, L. I., on August 11th. This is the tenth outing of the association, and an affair proven successful by the past years' affairs.

The Association has extended a warm invitation to everyone in the industry to avail themselves of the opportunity and attend the occasion.

Dilts

MORE HISTORY!

"Simple facts not foolish statements."

Read the history of another mill with four Dilts NEW TYPE Beating Engines and five old beaters re-built to the Dilts NEW TYPE for rope stock:

"These 62" x 50" beaters are operating very satisfactorily on rope stock. The capacity is 1500# air dry stock and the circulation is very good. The power consumed is 56 HP with the roll hard down. It gives uniform stock and no trouble is encountered in color mixing as this is determined by circulation.

"When charging no trouble is encountered in plugging and the loading time is considerably less than the Holland beaters as these new beaters take the stock much faster.

"We are certainly pleased with the whole installation and believe we have the best rope stock equipment that it is possible to get."

More and more, mills are coming to the Dilts common-sense NEW TYPE design for their beating engines. You should investigate this because

"Your paper is made in your beaters."

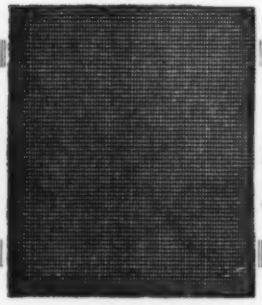
Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE - 15 PARK ROW - NEW YORK CITY

Superior seams

The superiority resulting from the best materials, seventy-five years and more of experience in weaving wire cloth, and the production of a smooth even mesh is "sewed up" in Superior wires by the application of a seam designed for the requirements of each particular job. The seam in a Cabble wire is like every other feature—Superior



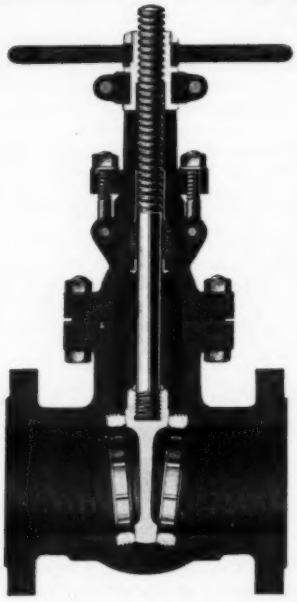
Wires and facings for All Paper and Pulp mill purposes

The William
Cabble
Excelsior Wire Mfg. Co.

74-88 Ainslee Street
143-151 Union Ave.
162 Union Ave.

Brooklyn, N. Y.

IMPORTANT FACTORS IN REDUCING OPERATING COSTS



LUNKENHEIMER
Iron Body Bronze Mounted
GATE VALVES

are aiding materially to solve the problem of more efficient and economical plant operation A direct comparison with any other valve designed for the same service will show conclusively why so many operating and plant executives specify and insist upon getting "Lunkenheimer"

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
SAN FRANCISCO NEW ORLEANS
LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

6—49—67

NORTHERN NEW YORK NEWS

Rexpulp Absorbs Keyes Fibre Company

The Rexpulp Products Company, of Chicago, has absorbed the Keyes Fibre Company, of Waterville, Me., perhaps the largest manufacturers in the world of pulp pie plates and similar molded pulp articles. The sales organization of the combined firm, which will do business under the name of the Keyes Fibre Company, Inc., will be handled by the John M. Hart Company, of Chicago, organizers of the Rexpulp Products Company. The purchase of the Keyes Fibre Company included its entire assets. The total capitalization of the combination amounts to more than $5,000,000.

The Keyes Fibre Company was established in 1903, and Martin L. Keyes was its president until his death in 1914. Mr. Keyes' only child, the late Mrs. George G. Averill, became heir to a large part of the Keyes Fibre Company's stock upon the death of her father. Her husband, Dr. George G. Averill, gave up in 1910 a lucrative medical practice in Cambridge, Mass., to devote his entire time in assisting Martin L. Keyes to develop the business of the Keyes Fibre Co. Dr. Averill, who has for many years been the controlling stockholder, treasurer and general manager of the Keyes Fibre Company, is to retire.

The board of directors of the amalgamated companies comprise Walter S. Wyman, Augusta, Me., president of the New England Public Service Company and the Central Maine Power Company; Spaulding Bisbee, Portland, manufacturer and banker; Ward F. Paine, Boston, member of the firm of Paine, Webber & Co., public utility operators and owners of the Portland Gas Company; Morriss F. LaCroix, Boston; S. Stanwood Menken, attorney, New York; John M. Hart, Chicago, sales agent of the Keyes Fibre Company; Merle P. Chaplin, New York, pulp and paper engineer; W. E. Parsons and Guy P. Gannett, Portland.

It was only recently that the Rexpulp Products Company acquired the site of the old Bath Iron Works, at Bath, Me., to be used as a laboratory for testing out certain new machinery for the production of pie plates by a vacuum molding process, invented by Merle P. Chaplin, who was formerly connected with the engineering department of the Keyes Fibre Company at Waterville.

Robert Gair, "Father of the Paper Box," Dies

Robert Gair, founder and head of the Robert Gair Co., manufacturer of paper boxes and box board with principal offices in New York City and with mills in several parts of the country, died suddenly in his summer home, Dunedin-on-the-Dunes at Westhampton Beach, Long Island, on July 31. Death was caused by apoplexy and came on Mr. Gair's eighty-eighth birthday. He was in excellent health up to a few moments before the end. With him for the celebration in honor of his birthday were his wife, two sons and four daughters and their families, all of whom were present when Mr. Gair passed away.

Robert Gair often had been called the "father of the paper box." Born in Edinburgh, Scotland, on July 31, 1939, the son of James Gair, a plumber, he came to America at the age of 14 years when his family migrated to this country. When young Gair was 21 years old he cast his first ballot for Abraham Lincoln. He was a veteran of the Civil War, having served throughout the great conflict with the Seventy-ninth Highlanders of the Ninth Corps of the Army of the Potomac. He commanded the regiment at the siege of Knoxville and at Spottsylvania, and when the war ended only 200 of the original 1,087 men of his Brooklyn volunteer regiment survived.

After the war Mr. Gair went into the paper box and bag business, starting in to make boxes in a loft at No. 163 Chambers St., New York. Through his inventions and through the development of his company he is credited with having changed the appearance of stores in many lines of retail trade. He was the first to manufacture folding paper boxes,

Frederick
Centrifugal
Pumps

Single-Suction Standard Paper Mill Stock Pump

A Frederick Pump costs little, if any more, than an average pump, and in the long run costs considerably less to operate. This has been proven in all kinds of service. The economy of using Frederick Pumps is becoming more widely appreciated wherever pumps are used. If you are contemplating the installation of pumping equipment, it will pay you to investigate Frederick Pumps and their performance in actual service. Many users have found that Frederick Pumps can do more for them than other pumps—and at less ultimate cost.

Our Standard Stock Pump handles stocks of consistencies up to 4% with excellent efficiency. Our Super-Stock Pump will efficiently handle 6% stock.

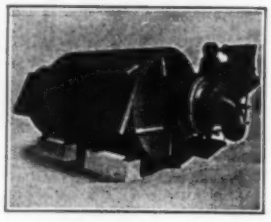
There is a Type of Frederick Pump Suitable to Every Need of a Paper-Mill

The Frederick Iron & Steel Company
Frederick, Maryland
In Canada:
Dominion Engineering Works, Ltd., Lachine, Que.

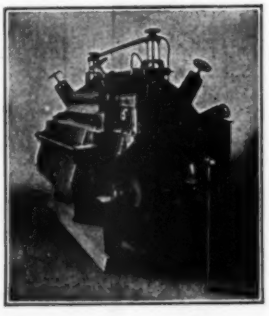
OLIVERS

REPEAT ORDERS

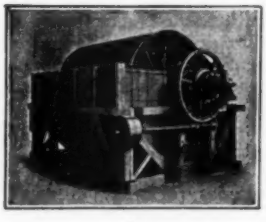
are the best kind of advertisement



One of the largest Paper Manufacturing Companies on the American Continent that already has OLIVERS in several of its mills, has just ordered six OLIVERS for a new mill.



Lime Mud Washing,
Deckering,
Reclaiming White Water Solids
will be their jobs.



Olivers do the work as it should be done.

See page 378 in the 1927 Paper and Pulp Mill Catalogue.

Oliver Continuous Filter Co.

San Francisco
802 Cunard Building
Oakland, Calif.
4th & Madison Sts.

New York
1547 33 W. 42nd Bldg.
Johannesburg, South Africa
E. L. Bateman, Locarno House

London
11 Southampton Row
Honolulu, T. H.
W. A. Ramsay, Ltd.

as well as paper bags. He gained his idea by watching housewives start home from stores attempting to carry sugar, tea, coffee, spices and other similar goods in cornucopias—a sheet of paper twisted into a cone. They had a bad habit of slipping and permitting the contents to spill. He thought a bag, which would not open at the sides and bottom would solve the problem, and he began to make the article. His capital was limited, but the idea took hold and his business grew. From this he developed the paper and cardboard carton, used almost exclusively today as contains for cakes, crackers, tobacco, cigarettes, soap and a hundred other commodities. He ultimately moved his business to the waterfront in Brooklyn, where the factories of the company now occupy five blocks on lower Washington street and giving to the district the nickname of "Gairsville."

Mr. Gair died many times a millionaire. In 1913 an insight into the profits of his company was obtained when he offered half of a $2,000,000 issue of preferred stock to the public. He and his sons retained half of the preferred issue and all of the $5,000,000 common. It was learned then that for the seven years prior to the offering the net earnings on preferred stock had averaged 13½ per cent. In the year ended January 31, 1913, the net earnings were almost 21 per cent.

His company has expanded considerably in recent years. There are six Gair board mills or box factories scattered through the country. Ten years ago Mr. Gair inaugurated the policy of all-day closing on Saturday during the summer months. He did this, he explained, to give his 3,000 employes a chance "to work in their gardens."

Mr. Gair is survived by his widow, two sons, Robert Gair, Jr., and George W. Gair, both of whom are connected with the Robert Gair Company, and four daughters, Dr. E. Florence Gair, Miss M. Elizabeth Gair, Mrs. William Gill and Mrs. Jessie Gair Feeney.

Changes at Harrisville

Philip Bond of Deferiet has been appointed superintendent of the Harrisville Paper Co., formerly the Diana Paper Co. A large force is engaged in putting in new machinery under the charge of Corwin T. Jewell, superintendent of the St. Regis Paper Co.

Although the mill was recently taken over by capital representing the St. Regis group, it will be operated as an independent mill.

The Climax Manufacturing Co., of Lowville, manufacturers of folding paper boxes and wood fiber drums, is building an addition, 175 ft. by 95 ft., on its plant. The new building is to be used for manufacturing and storage.

Negotiations are under way whereby Robert L. Pease, vice-president of Knowlton Brothers Company, will sell his holdings in that mill and purchase the stock of George F. Clark in the Brownville Paper Co. The latter company is headed by Samuel A. Upham as president and was incorporated in 1897.

Committee Named to Study Trade Schools

The committee of five who will visit the various colleges and trade schools in which paper-making is part of the course of study, was recently named by President W. R. Smith of the International Brotherhood of Paper Makers.

This committee consists of Matthew J. Burns of Albany, secretary of the International; Frank Barry of Albany, first vice-president; Chester Jordan of Kenora, Ont.; Thomas F. McGrath of Escanaba, Mich., and Robert T. Burkhart of Iroquois Falls, Ont. They met in Montreal and mapped their itinerary.

Augsbury Visits Mont Louis Tract

F. A. Augsbury, president of the Algonquin Paper Corp., Ogdensburg, spent several days recently on the Gaspe peninsula inspecting the work done on the Mont Louis tract of 1,000,000 acres of virgin forest land, which he purchased

Long-Life Wires

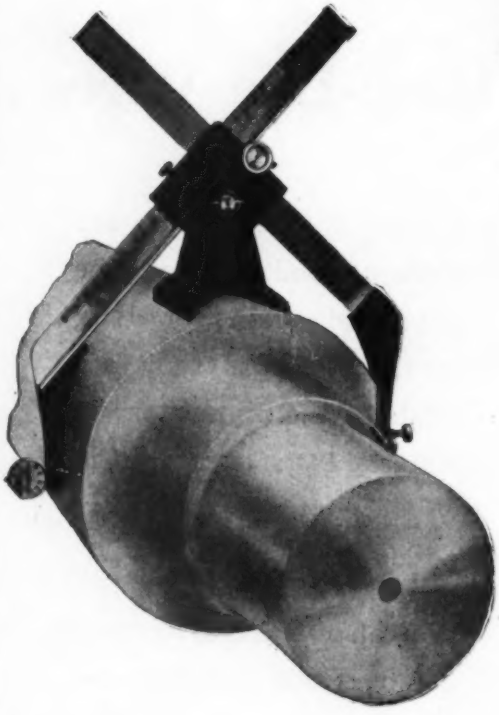
Cheney Bigelow Wires are always good, and can be depended upon for long service, because they are made of the highest grade material by an organization with many years of experience behind it.

We also manufacture Dandy Rolls and Cylinder Moulds of superior quality and are prepared to repair and re-cover your old rolls and moulds, or to make immediate shipment of brass or bronze wire cloth for covering cylinders, from our stock which includes practically all meshes from No. 14 to No. 100 in a large assortment of widths.

Cheney Bigelow Wire Works

Springfield, Mass.

Established 1842



LOBDELL

IMPROVED
MICROMETER ROLL CALIPER

Is indispensable to the mill equipped to regrind its own rolls and is equally useful in every mill in keeping an accurate check on the condition of the calender and press rolls.

Light Weight
Easily Adjusted
Extremely Accurate

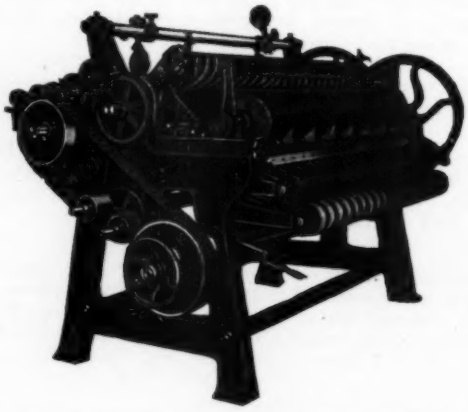
LOBDELL CAR WHEEL COMPANY
Established 1836
WILMINGTON, DELAWARE

DEPENDABLE DURABLE

Towel Interfolding Machines

NAPKIN FOLDERS
PRINTING DEVICES
BUNDLING PRESSES

Paper Converting Machine Co.
Green Bay, Wis.



PAPER CUTTERS

Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
LAWRENCE, MASS.

recently from Henry Clay Pierce who died a short time ago.

Docks, conveyors, ponds and dams have been built preparatory to cutting the timber on a large scale. The pulp wood will be brought to Ogdensburg for use in the Algonquin mill. Since disposing of his former fleet to the Canada Steamship Lines, Mr. Augsbury has started to assemble a new line of boats for the pulp wood business, and three boats built for him in England last winter are now on the St. Lawrence.

The Corinth plant of the International Paper Co. has gone on a four-day schedule for a time. Light shipments are given as the cause of change. The ground wood department has resumed work, and the product is being shipped to the Glens Falls plant. The Curtis plant operating a pulp supply mill is running six days a week and sending the pulp mash through an underground conduit to the pulp mill.

Five boats carrying more than 4,000 cords of pulpwood have arrived at Oswego from New Foundland. The wood is consigned to the Oswego Falls Corp., Fulton. A Norwegian vessel also discharged 800 cords at Oswego.

Jack Leo, former head electrician at the Raymondville plant of the St. Regis Paper Co., has been transferred to the Harrisville plant which the St. Regis recently purchased.

Alfred M. Morency, for ten years superintendent of the bottoming department of the Taggart mills in Watertown, has gone to New York to become superintendent of the entire plant of the Miller, Tompkins and Company, 16 Debrosses St.

The Newton Falls Paper Co. won its freight rate complaint case against the Reading railroad and other carriers. The Interstate Commerce Commission decided that the rates on china clay from Philadelphia to Newton Falls were unreasonable and ordered a reduction.

Lightning did considerable damage to the plant of the National Paper Products Co., at Carthage, causing the mill to be shut down for several hours. The bolt burned out one potential transformer, one high tension bushing and one contact post.

NEW YORK CITY NEWS

Certain-teed-Beaver Merger Likely

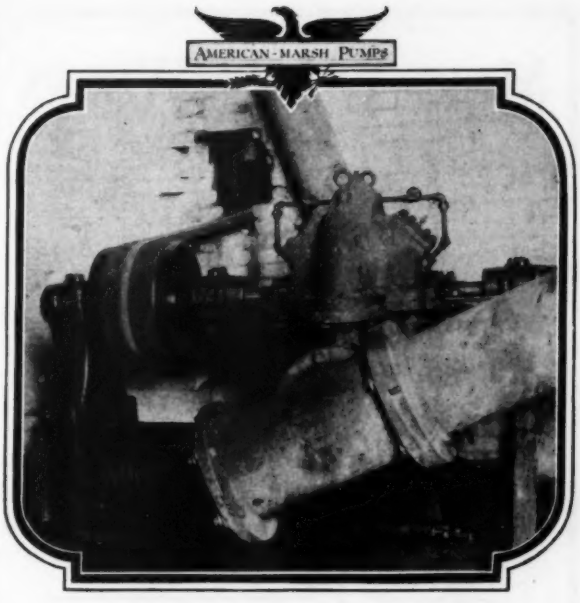
The Certain-teed Products Corp., manufacturer of roofing and building papers and other products, will make an offer of merger to the stockholders of the Glidden Co., manufacturer of paint, and the Beaver Products Co., manufacturer of wall board and other paper boards, according to announcement made here.

It is planned to offer one share of Certain-teed common stock for about three shares of Glidden Co., and about 100,000 shares of Certain-teed common for Beaver Products' stock, subject to the latter company's indebtedness. Glidden's average earnings for the past three years would approximate $10 per share annually on the Certain-teed stock which would be issued on a three-for-one basis, and the average earnings of Beaver Products for the same period would approximate $4 a share on 100,000 shares of Certain-teed stock. Combined sales of the three compánies would approximate $75,000,000 per year.

The merger would give Glidden and Beaver Products stockholders dividend paying stock in place of non-dividend paying issues. It would permit also the refunding $6,800,000 Beaver Products funded debt, which for the most part bears interest at 8 per cent.

Wall Paper Manufacturers Convene

Wall paper manufacturers and jobbers from various parts of the country were in New York recently to attend the national convention of the Wall Paper Wholesalers and Manufacturers'



A Notable Record on a Hard Job

THE American-Marsh Centrifugal Pump shown above is installed at Rex Paper Company, Kalamazoo, Michigan. It has just completed its third year of continuous, 24-hour-day service—without a single repair—without attention, except lubrication. Yet this unit handles 500 gallons per minute of white water heavy with English clay and alum—a notable record on a hard job.

In all there are over a dozen American-Marsh Pumps operating today in the Rex Mill, and N. E. Schell, chief engineer, states that every pump has proved trustworthy, performing exactly as we specified that it would.

Let Us Figure With You

Don't take a chance. Paper making to be profitable must be continuous and pump failure can mean a heavy loss. If you need dependable pumps for any mill service, consult with our engineers. We build a complete line—high-grade centrifugal and steam pumps of all approved types—pumping units which assure your mill the same unfailing service that Rex Paper Company now enjoys. Write for our Bulletins, giving us a summary of your particular problem.

AMERICAN-MARSH

AMERICAN STEAM PUMP COMPANY
BATTLE CREEK, MICHIGAN
Sales Engineers in All of the Principal Cities

Centrifugal Pumps

MURRAY IRON WORKS COMPANY

(INCORPORATED 1870)

BURLINGTON, IOWA

Successful Builders for 56 Years of BOILERS *and* ENGINES

PLEASE SEND US YOUR INQUIRIES

Engines	*Boilers*
CORLISS	INTERNAL - FURNACE
PUMPING	TUBULAR
UNA-FLOW	WATER-TUBE

Our Engine and Boiler Shops are quite independent of each other. ¶ And we Specialize on Boilers the same as we Specialize on Engines.

You can take service for granted

You can take long, trouble-free service for granted when you install a genuine Jenkins Valve. You can feel sure that its extra sturdiness will make itself felt in lower maintenance costs.

The Jenkins "Diamond" mark, without which no valve is a genuine Jenkins, is more than a mere identification mark. It is the mark of a valve well made from analyses-proved metals,—a valve which has proved its worth in a wide-margin safety test.

There are Jenkins for practically every valve requirement of the paper industry. At supply houses everywhere.

JENKINS BROS.

80 White Street.....New York, N. Y.
524 Atlantic Avenue.....Boston, Mass.
133 No. Seventh Street..Philadelphia, Pa.
646 Washington Boulevard..Chicago, Ill.

JENKINS BROS., LIMITED

Montreal, Canada London, England

Always marked with the "Diamond"

Jenkins Valves

SINCE 1864

1864 1927

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

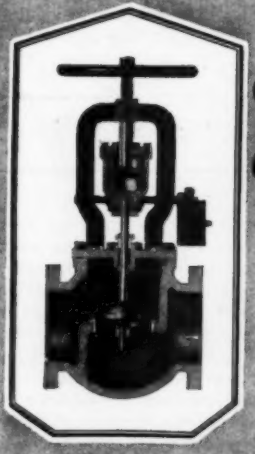
Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY

CAMDEN, MAINE

■

Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
and direct



The Davis Stop and Check Valve permits steam to flow from boiler to header, but closes automatically should the flow be reversed. Made in globe and angle patterns, for pressures up to 350 lbs., and total temperatures to 800 degrees. Sizes 2 to 12 inches.

This valve won't leak

DAVIS Stop and Check Valves are free from the troubles of the internal dashpot. On the Davis the oil dashpot is outside and the action of the valve is visible.

This valve will not stick —scale doesn't bother it— it is always reliable and silent. You can test its operation easily by hand, and as often as you like.

Send for the Davis Catalog with complete information on the full line of Davis Valve Specialties.

DAVIS VALVE SPECIALTIES

STEAM-SAVERS SINCE 1875

G. M. DAVIS REGULATOR CO., 422 Milwaukee Avenue, Chicago, Ill.

Association at the Hotel Commodore. Justin P. Allman, of Philadelphia, president of the association, announced wall paper's return in all parts of the country. He said this was "natural and logical" because "women love colors and when you starve them for a number of years a natural reaction results."

A highly interesting talk was given at the convention by Richard E. Thibaut, of New York, who made the prediction that in the future physicians would prescribe wall paper in the treatment of neurosis. "The definite effects of color combinations, when brought out through striking designs, are well known to psychologists," he said. "Color alone has not curative qualities, but color expressed in design has. It is a sign of national health that people are preferring this year, larger designs and more pronounced colors. Yellows are coming to the front, tending to make oranges of reds. The stifling effect of great buildings and small apartment rooms is being offset by the use of scenic wall papers."

At a meeting of the Board of Directors of the Manufacturers Paper Co., 30 East Forty-second St., New York, Louis Bittner, formerly vice president, was elected first vice president, and A. C. Scrimgeour was elected second vice president. Both have been with the company for many years and are well known in the paper trade. The other officers remain as formerly: Rudolf Pagenstetcher, president; W. G. Kimball, treasurer, and Gustav Pagenstecher, secretary.

The International Paper Co., has declared a quarterly dividend of 60 cents on the common stock, payable August 15 to stockholders of record on August 1. Previously 50 cents was paid quarterly.

At a directors' meeting of the Continental Paper and Bag Mills Corp., principal offices at 1 Pershing Square, New York City, Herman Elsas was re-elected president and general manager, I. Kuhe was again elected vice president and manager of sales, Owen Shepherd was elected treasurer, and E. B. Sagendorf was chosen secretary.

Ruberoid Changes Are Ratified

Stockholders of the Ruberoid Co., manufacturer of roofing felt and paper, have ratified the directors' resolutions declaring it advisable that the existing capital stock of the corporation having par value be reclassed into shares without par value.

The authorized capitalization is to be increased from 35,180 to 150,000 shares of common stock with no par value, and that stockholders of record July 15 receive the right to subscribe to additional stock at $50 a share on the basis of one new share for each share now held.

A petition in bankruptcy was filed July 20 against Jacob Sonnenshein, jobber of paper at 58 First St., New York, by these creditors: Resolute Products Co., $50; Paper Products Mfg. Co., $250, and the Waxed Products Co., Inc., $675.

The New York Blue Print Paper Co., Inc., 96 Reade St., New York, has filed notice of an increase in capitalization from $400,000 to $800,000.

The Monarch Bag and Paper Co., of New York City, has been incorporated under New York State laws with a capital stock of $10,000 to deal in paper and bags. The new corporation is represented by J. Parker, 150 Broadway, New York.

OHIO NEWS

Developments at Sorg-Oglesby-Smith

In July *The Sosco News* made its appearance,—house-organ for the Sorg-Oglesby-Smith paper interests, and is to be

Warren Stuff Pump fills 1400 lb. beater with 5% stock in 1 minute and 20 seconds

In the New Hampshire mill in which this pump is installed and in many other pulp and paper mills Warren Stuff Pumps are giving pulp and paper makers a new conception of the efficiency and continuous dependability with which stock up to 5% and greater consistency may be handled.

Designed by engineers thoroughly familiar with paper mill requirements and built by an organization specializing in high grade pumps for twenty-nine years, the Warren Stuff Pump may be confidently specified to handle your pulped stocks.

May we send you a Bulletin and estimate?

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Steam Pump Co., Inc.
Warren, Mass.

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What About That New Machine?

Start It Right

Equip It With Rubber Covered Rolls
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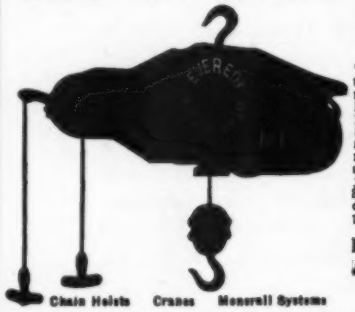
Mfd. By

STOWE & WOODWARD COMPANY
NEWTON UPPER FALLS, MASS.

500 lb. Electric Hoist

$225.00



This Eveready Hoist is the most accessible hoist made. Light—500 lb. hoist weighs 225 lbs.; 1000 lb. hoist 250 lbs. Speedy — 40 feet per minute A. C., 85 feet per minute D. C. Limit stop at top and bottom adjustable to any point. Suspended wherever chain or air hoist is placed.

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Steam **Triplex Plunger**
Vacuum Pumps **Jet Condensers**

Manufactured by
The Scranton Pump Co., Scranton, Pa.

PUMPS

80 YEARS'—

Experience in Making Dryer Felts

FITCHBURG Cotton Dryer Felts have conformed to the highest standards of quality and workmanship for over eighty years. This is one reason why today they are used so extensively.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

¶ Fine faced felts for fine papers. For coarse papers, use "Triune" three-ply Felts —**they're dependable.**

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ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

THE WATERBURY FELT CO.

SKANEATELES FALLS
New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

published weekly under the editorship of D. D. Thirkeld, personal director of the Sorg Paper Co.

Excavation work has been completed recently, and actual construction of the $1,000,000 power plant to furnish power to all of the group, began late in July. They plan to complete the project by November 1. It will concentrate the course of electrical power supplying all the machinery in the mill group.

The power house will be of concrete brick and steel construction, costing around $135,000, and will generate 10,000 kilowatts, to be delivered at a voltage of 6,600. Two giant boilers, fueled with pulverized coal will carry a 400 lb. steam pressure. A new hydro-electric plant will generate 440 kilowatts. Completion of this plant will call for abandonment of the two power houses which have furnished a part of the power for the mills in years past. Plans for this new plant, now under way, have been in the making for the past three years.

Pictures recently produced by the Champion Coated Paper Co., Hamilton, show that the firm is looking into the future by conserving its forest supply. They have a 160,000 acre tract in North Carolina which is carefully preserved. All of the dead trunks are used exclusively for making of the best paper, and when cut, are replaced immediately by young trees.

C. H. Randolph, official of the Lawrence Bag Co., for the past two years, resigned from that concern recently. He will take a vacation before making his future plans. He is a veteran in the paper bag business, having been connected with the Advance Bag Co., for 23 years prior to his associations with the Lawrence Bag Co.

Catalogues, Booklets, Bulletins, Etc.

Chicago Belting Company, Chicago—An elaborate reference catalog has come to us telling many interesting and informing facts on leather belting, belting accessories, mechanical leathers and leather specialties. The book is worthy of more than casual mention for its fine make-up and colored illustrations, besides being a valuable reference work.

Dean & Son, Ltd., 29 King St., Covent Garden, London, W. C. 2, England—"Paper Makers' Directory of All Nations," for 1927 has come to us, and those of our readers who have been receiving it in years past will note its growth and development. The mill entries of Great Britain give location, production, number and width of machines, tonnage output, power used, etc., and those with many lists of Allied Trades, including Wholesale Stationers and Paper Merchants, Waste Paper, Rag and Paper Stock Dealers, Cardboard Box Manufacturers, China Clay Producers and Merchants, Paper Bag Makers, Paper Agents and Mill Representatives, and Export Merchant Shippers of Paper, form the first part of the book. The second portion deals with Paper, Pulp and Board Mills in Foreign Countries and British Dominions Oversea, while the third sets out the list of mill productions arranged in three ways: class of goods manufactured under more than 400 trade headings; country of origin and name of firm.

Rodney Hunt Machine Co., Orange, Mass.—No. 32 catalog contains information relative to their line of water control apparatus. Such equipment as floor stands, gate hoists, and gates is described in detail as well as very nicely illustrated. An engineering section in which is included much helpful data on the selection of sluice gates, stands and hoists, with charts to aid in the solution of hydraulic problems involving water flow, or power transmission problems such as speeds of pulleys and gears, and horsepower transmitted by steel shafting, is also contained in this catalog. In addition to these charts are tables of conversion factors, areas and volumes, and weights of materials. It is believed that anyone who is really interested can obtain a copy of it by writing for it on their firm's letter head.

Layne & Bowler, Inc., Memphis, Tenn.—Layne Well Water Systems and Vertical Turbine Pumps are described in their

Wood's CAST IRON PULLEYS

Just Note Their Design

THERE'S a great deal of ingenuity and thought behind the design of Wood's Cast Iron Pulleys, simple as they may seem.

Witness their split cast iron construction which makes it possible to fit Wood's Universal Giant Pulleys on all standard shafts, large or small, by simply changing the split bushings to conform with the shaft diameter.

Cast iron gives Wood's Universal Giant Pulleys perfect rigidity and strength.

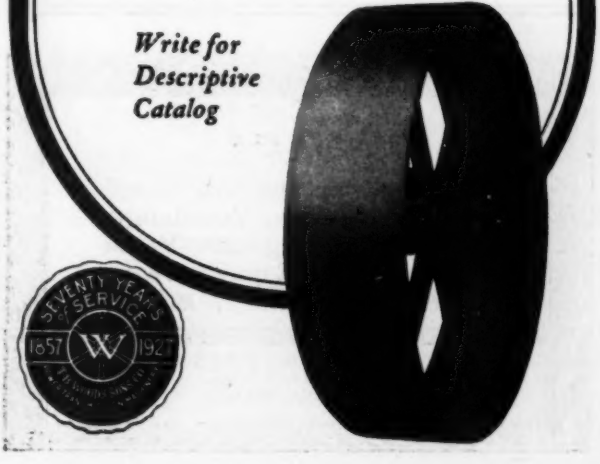
Four bolts hold the shaft and pulley in a rigid vise-like grip while the rims are double bolted to give a hairline fit at the rim joint.

Then there's the fine workmanship characteristic of all Wood's Power Transmission Equipment—a traditional Standard since 1857.

When ordering mill supplies insist on genuine Wood's Cast Iron Pulleys—they're better.

T. B. WOOD'S SONS COMPANY
Chambersburg, Penna.

Write for Descriptive Catalog



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We offer at this time a chance for a paper mill executive or superintendent, with practical knowledge of paper making, and some cash to back it up, who wants a mill of his own, to get an excellent money making paper mill in New York State. This proposition is available owing to the advanced age of the owner, and it is well worth your investigation.

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OUR MOTTO: "Service First"

Steel Plate Construction
Steel Storage Tanks, Blast Furnaces, Gas Holders
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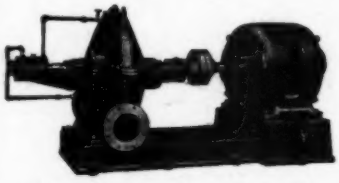
FOR SALE—6 used Jones Imperial Jordans, with bronze or steel fillings. Will sell "as is" or factory rebuilt. The Noble & Wood Machine Co., Hoosick Falls, N. Y.

It Pays to Advertise Opportunities in this Opportunity Section



High Efficiency Centrifugal Pumps

We build the latest improved types for every pumping requirement in paper and pulp mills.

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P. O. Box 70B LAWRENCE, MASS.

PAPER MACHINES FOR SALE

In good condition Immediate Delivery

One—2-cylinder machine. 2 presses; 10 dryers, 42"x84"; one calender; reel; single drum winder; marshall drive.

One Fourdrinier machine. Wire 96"x50'. 2 presses; 15 dryers, 48"x94"; one calender; reel; two drum winder; marshall drive.

By:
FRANK H. DAVIS COMPANY
175 Richdale Avenue, Cambridge, Mass.

new catalog. It is literally filled with photographic reproductions of various installations throughout the entire country and in many fields of service. In addition to the illustrations are interesting sections discussing in part the origin of hydrology, source and dependability of ground water, economic importance of ground water, and descriptive information on their equipment and systems of pumping. Several pages of valuable hydraulic and pumping data are included to make the presentation of even greater value to those who are interested in pumping problems.

Leeds & Northrup Company, Philadelphia—Their catalogue entitled "Automatic Combustion Control for Boiler Furnaces," bulletin No. 660, is worthy of mention. In it an automatic system of metered combustion control for boiler furnaces is described, with pictures, and actual charts given of installations made with the results attained. Apparatus and hook-ups are shown for both stoker and powdered fuel plants. This booklet should be of sufficient interest to our readers to request a copy from the above concern, who will gladly send it to those interested.

Link-Belt Company, Chicago—They have recently issued Belt Conveyor Data Book No. 625, consisting of 148 pages containing a large amount of engineering data as well as a catalog section. In the engineering section are discussed such subjects as belt conveyor drives, spacing of idlers and return idlers, average limits of angles of inclined belts for handling various materials, horsepower, belt stress, etc. Several problems involving the design of belt conveyors are given and solved to aid users of such equipment in working out their individual problems. The book also contains many illustrations including typical belt conveyor installations, and much descriptive material. It is a worthy combined catalog and engineering handbook which should prove of interest to anyone who is concerned with design, construction, and operation of belt conveyors.

Cellulose from the Industrial Standpoint

The applications of cellulose in industry will depend on chemical research, according to C. J. Fox and L. Hall, of the Cross and Bevan Laboratories, London, who presented a paper on "Cellulose from the Industrial Standpoint" at the forty-sixth annual meeting of the Society of Chemical Industry, held in Edinburgh, Scotland, on July 6, 1927. It was pointed out by the authors of this paper that the technical applications of cellulose had been until recently almost wholly dependent upon the skill of engineers and craftsmen and the prescience of business men, but that latterly the chemist had been playing an ever-increasing part, with the result that the future was going to be very largely dependent upon his efforts.

Reference was made to developments in the textile industries, such as artificial silk, but it was remarked that the industrial problems of the present and future were unlimited in number and in interest. What, it was asked, was to be the source from which should come the raw materials for the ever-increasing demands of the cellulose industries, old and new? Which of the 2,000 fibre plants available should be selected from which to derive the thoroughbred and cross-bred cultivated products of the future? Cotton and jute had obtained their eminence; why not others? Would it be feasible to extend the use of wood cellulose as a substitute for cotton, and could afforestation meet the increased demand, as well as that of the ravenous newspaper publishers, and of course, the timber trades? Those and other questions were questions of the hour.

In a paper by J. L. A. Macdonald, allusion was made to the many eminent men who had been associated with the development and technology of chemical pulp production, the position of the woodpulp industry being referred to as a worthy monument to their achievement. Nevertheless, the industry was based upon an empirical foundation, inasmuch as but little was known of the fundamental processes involved, namely—the action of the alkali or acid upon the non-cellulosic components of the original wood complex. In general terms, according to Dr. Macdonald, the papermaker was by no means critical of the real quality of the pulp he bought, provided it approximated to his ideas of price and apparent suitability.

Rhoads Tannate Leather Belting

RESULTS IT GAVE

LAST year a large paper mill in Ohio made marked changes in the power and transmission installation in their Beater Room. Eight kinds of belting were given tryouts in this new installation.

On a beater, with a dry fibre capacity of 1700 lbs. they have an 18-inch double Rhoads Tannate Leather Belt. It has been running over seven months with no take-ups or repairs. The report says, "It is the only one that has not given any trouble."

Another interesting point: The automatic shut-offs on the Beater drives are set at a 75 H. P. load, except the Tannate driven one, which is now set at 90 H. P. showing their confidence in Tannate. They claim this Beater shows 2% increase in production.

Tannate Belting often proves its ability to save trouble and increase production.

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MAGIC BOILER PRESERVATIVE

"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

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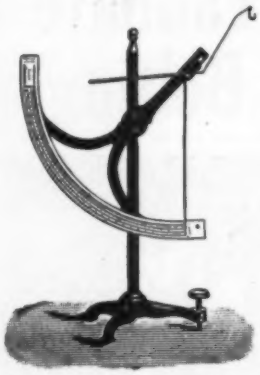
World Standard Paper Testers

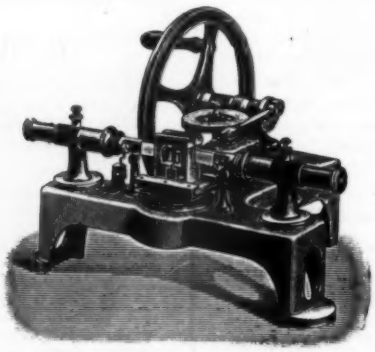


All Kinds of Scales

Patented

Schopper-Riegler Beating Tester
Uniformity of beating means better paper.

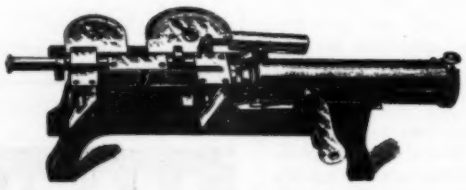
The Schopper Standard Desk Micrometer
Carried in stock—1/1000 of an inch for Boards, 1/2000 of an inch for Paper.



Schopper Folding Tester
The folding test has become standard for bonds, ledgers, and Kraft papers.

Schopper Strength and Stretch Tester

Small Piece Pocket Paper Scale
By weighing a piece 2 in. by 4 in., gives basis weight 25x38, 24x36, 22x34, 500 sheets.



Rapid Strength and Stretch Tester

FOREIGN PAPER MILLS, Inc.

Sole Agents

72 DUANE STREET, NEW YORK

Warehouses: NEW YORK—MONTREAL

Write for Booklet on Paper Testing Instruments No. I-100

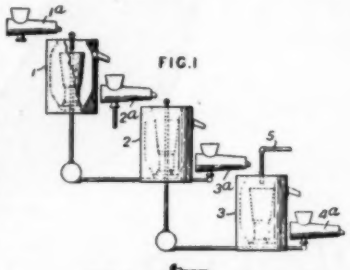
Technical Developments in the Paper Industry

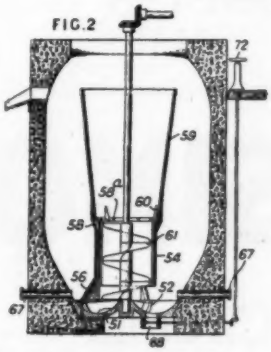
Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Bleaching Pulp

IN A PULP bleaching process, the bleaching liquor flows in countercurrent to the stream of pulp, the final treatment, therefore, being effected by the strongest liquor. The pulp stock passes by gravity from cell to cell (1..3) with alternate thickeners (1ª... 4ª), the bleach liquor being introduced by a pipe (5) to the cell (3). After mixing, the bleach liquor is extracted by the thickener (4ª) and pumped into the cell (2) and subsequently after mixing in cell (2) and extraction by thickener (3ª) into cell (1).





The agitator in each cell comprises an elevating worm (61) which rotates in a casing (54) which is provided with inclined vanes. Vanes (52), (56), and (60) are also fixed respectively in the bottom (51), to the legs of the casing (54) and to the uptake (59) to prevent rotation of the pulp and the liquor. Air is admitted by holes (58ª) from a duct (58) at one side of the casing (54). Pipes (67) may admit water for diluting the pulp to enable it to be dumped, if desired, through a valve (68) which is operated with the aid of the hand gear (72). The stock enters each cell at the same consistency, from eighteen to twenty-four per cent. The encrustating linings of the cellulose fibers and the various chemical compounds separated by the bleaching liquor are largely removed by the thickeners. British Patent No. 269,031.

Injuries to Felts

VARIOUS interesting observations have been made at the Governmental Testing Laboratories in Berlin on felts used in the paper making machine. The investigation was concerned both with the dry felts as well as the wet felts on the paper making machine, and a distinction was made between woolen felts and cotton felts.

One test was made on a woolen wet felt which became tender after a very short time. A sample of the unused felt was tested with litmus paper and found to have a decidedly alkaline reaction. It also gave a much stronger biuret reaction than is customary with normal woolen fiber. The wool showed clearly defined evidences of chemical action under the microscope. In the used felt the wool had been thoroughly decomposed. The alkaline reaction was less strong than in the unused felt but the biuret reaction was stronger. The content of alkali in the unused felt was so high that microscopic changes in the wool structure were clearly evident. In using the felt, the alkali present therein had a further opportunity of acting on the fibers. Inasmuch as the felt was rapidly decomposed, it had to be assumed that the alkaline wash liquors that are generally used in washing the felt had an added effect in promoting its destruction.

A woolen dry felt was examined which had become hard and brittle and brown-colored at certain spots after being in use only eight days. Alkaline and quite strong biuret reactions were observed at these brown spots. The wool fibers from these spots also showed clear signs of decomposition. The alkali and biuret reactions were much less pronounced in the rest of the fabric; on the other hand, the wool was also impaired in strength and structure. There was no biuret reaction evidenced at the edges of the felt where it does not come in contact with the wet paper web as it is carried around the cylinder driers.

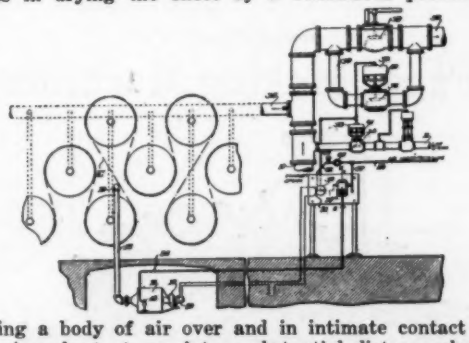
The tests clearly indicated the great effect of alkali on the woolen felts and other examinations were also made to determine the effect of acids and various salts on the cotton felts.

In cleaning woolen felts, the use of alkalies should be avoided as far as possible, but where it is necessary to use alkalies, the solution should be very dilute and lukewarm. It is best to use ammoniacal solutions or solutions of soda. After the felt has been washed with these solutions, it should be immediately and thoroughly washed with water to which a little acid has been added in order to neutralize the alkali still present in the felt.

While the cotton felts are not attacked by weak alkalies, nevertheless they are attacked by strong alkalies, especially at elevated temperatures. Mineral acids are very harmful to cotton felts and this also applies to salts, such as magnesium chloride, which split off acid under certain conditions.

Controlling Moisture Content of Paper

METHOD of controlling the moisture content of a sheet of paper during the process of its manufacture is described in United States Patent No. 1,633,817. This process consists in drying the sheet by a continuous process and



delivering a body of air over and in intimate contact with the moving sheet at a point a substantial distance short of the point of completion of the drying process. Then the moisture content of the body of air is continuously tested and the heat supplied to the sheet of paper during the process of drying is controlled in accordance with the moisture content of the body of air.

Sulphite Pulp from Pine Wood

THE process which is patented in French Patent No. 583,506 and which is of Finnish origin consists in treating the wood chips with a liquid which is made by dissolving one per cent of sodium hydroxide, figured on the quantity of cellulose, in one hundred to two hundred liters of water. The operation is carried out in the usual digester. The digester is then filled with calcium bisulphite of three and one half

18" Diameter Blade

Koegel's Patent Ball Bearing TOP SLITTER

"The Speed King"
TRADE MARK

Used on All Fast Running Paper Machines and Winders
For
Any Size of Shaft and Up to 10′ Blade

Bottom Slitters
Standard and Special Clamp
Double Edge Tool Steel Bands

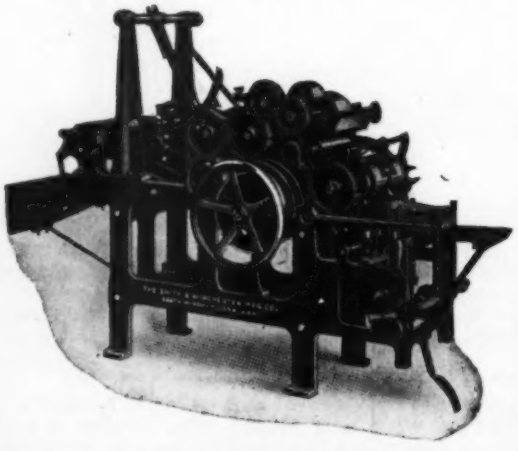
Give Shaft Size and Outside Diameter

16" Diameter

CHAS. KOEGEL'S SONS, Inc.
HOLYOKE, MASS., U. S. A.

Established 1829
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

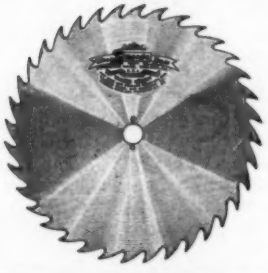
Manufacturers of
Paper Making Machinery



Paper Bag Making Machinery

SIMONDS

Circular Saws and Machine Knives



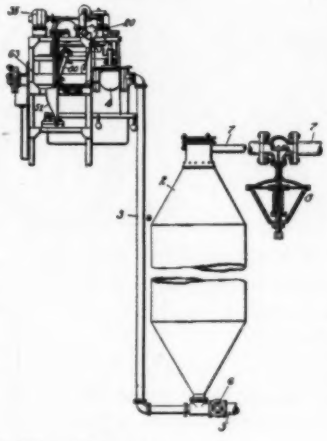
For pulp and paper mills it is economy to use Simonds Saws and Barker, Chipper and Paper Cutter Knives because they hold their edge longer and cut faster. They are backed by a near century of experience. Write for catalogue and prices.

Simonds Saw and Steel Co.
Established 1832
Fitchburg, Mass. Chicago, Ill.

or four and one half per cent concentration in total sulphurous acid, on which 0.8 to 1.5 per cent is in the combined state. The temperature of the treatment is maintained at a point which is slightly less than the boiling point and the pressure is raised to five or eight atmospheres.

Pulp Digestion Apparatus

THE illustration shows a pulp digester which is patented in United States Patent No. 1,633,-545. This apparatus consists of a digester (2) and a steam line (2) which leads to this digester for supplying steam to it. At the left of the illustration is seen the regulating apparatus, which is of automatic character and controls the flow of steam into the digester through the line (3) in accordance with the rate of steam flow and the pressure conditions in the digester.

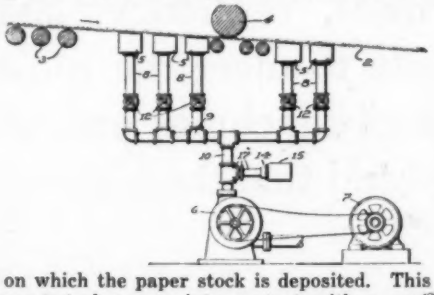


Sulphite Boiling Process

A VERY marked increase is observed between the consumption of iodine by original sulphite liquors and those which have been preserved in about one per cent of alkaline solution. The amount of loosely combined sulphur dioxide is greater than that which can be accounted for by the aldehydes and sugars present. Furthermore, the amount of organically combined sulphurous acid in an original sulphite liquor is identical with that of a "fermented" liquor. The sulphur dioxide must, therefore, be considered to be combined with the ligninsulphonic acid. The presence of an aldehyde group in the latter is improbable since the copper number of carefully prepared dialyzed ligninsulphonic acid is negligible. It is probable that the sulphurous acid is united to tautomerically active phenols. Berichte, 1927, volume 60, pages 782-6.

Paper Making Machine

THE paper making machine which is shown in the accompanying illustration and which is patented in United States Patent No. 1,633,189 consists of a combination of a travelling carrier shown at (2) which runs over the rollers



(3) and on which the paper stock is deposited. This moving web of paperstock comes into contact with a suction box, shown at (5). This box is connected with a suction pump (6). The various pipe connections which lead to this pump are shown in the figure. There is also provided a valve (17) of slight inertia for automatically controlling the vacuum at this box. Means are also provided for operating this valve in order to partially overcome the inertia effect with the result that a substantially constant vacuum is maintained in the suction box.

Making Pulp with Liquors of Slight Sulphite Content

THE sulphite content of the digestion liquor is of importance as far as the rapidity of the digestion is concerned. This is due to the fact that the acidity during the progress of the digestion is less when the concentration of sulphite is higher than when it is low. A great difference is not expected in the first stages of the digestion. For the first phase of the reaction is the addition of sulphite which is not dependent on the variations in the concentration of the hydrogen ions and in the second place there is not so much lignosulphonic acid and sulphuric acid present in the digestion liquor, so that the acidity could not be changed in this manner.

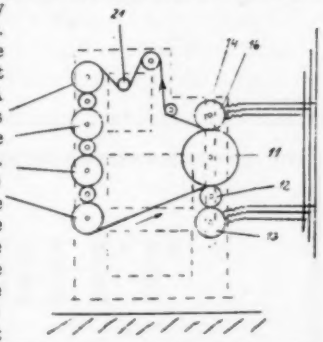
As the process proceeds the acidity commences to play a more important role in the operation. This is evidenced more in the quantity of direct reduced sugar in the digestion liquor than in an increase in the speed of the production of pulp. The yield of pulp is actually first affected during the last third of the digestion process.

Various tabulations are given in the article to indicate the manner in which the progress of the digestion is affected by the use of such digestion liquors. The formation of pentosans is also discussed and their effect on the progress of the digestion described.

The lignin in the digestion of sulphite pulp with the aid of sulphite liquors which contain a low percentage of sulphite combines with a comparatively small amount of sulphurous acid. At the end of the digestion the ratio of sulphur to lignin x 100 varies between 9 and 11.5. Der Papierfabrikant, Fest und Ausland Heft, 1927, pages 61-3.

Unrolling Device for Paper

GERMAN Patent No. 444,348 is concerned with a device for the unrolling of paper which is rolled up from an unrolling roller on to a finishing roller. In order to obtain a regular movement of the paper web, the rollers are arranged in such a fashion that they rub up against one another. For this purpose one of the rolls may be allowed to exert its weight on the other. A method of carrying at this process is indicated in the accompanying illustration. The unwinding roller (11) and winding roller (12) are shown in the figure, these rollers being driven by the friction roller (13). The rollers (11) and (12) are arranged in the carriers (14) of the calender frame so that they can be moved around. The paper runs from the roller (11) over the calender rolls (15) to the winding roller, whereby the rolls (15) are advantageously driven at a speed which corresponds to that of the driving roller (13). Another driving roll (16) may be arranged on the unwinding roller (11) for driving the winding rollers, and the driving roll (16) is coupled with the lower driving roll for the purpose of securing simultaneous movement of the paper web. In order to equalize the tension on the paper web during the rewinding process the loading roller (21) is arranged in a freely movable position on the paper web.



Continuous Surface Sizing of Paper

THE size solution (glue, etc.) is prepared in vats which hold enough of the size to cover from eight to ten hours' operation of the machine. When the size is ready, then it is emptied out into a container which is maintained at a temperature of 40 degrees C. on a water bath. It is taken from this container into the size trough in which the sizing operation is effected. The size trough is also located in a water bath maintained at a temperature of 40 to 45 degrees C. The paper web is carried around a roller which turns within this trough. The web is then dried, mainly with warm air. The temperature must not be allowed to rise above 30 degrees C. in the drying operation. It is advisable to size the paper in the mass with about one and one-half per cent size before this process is carried out. Surface sizing of the paper has a very great effect on its strength. Thus, before the sizing,

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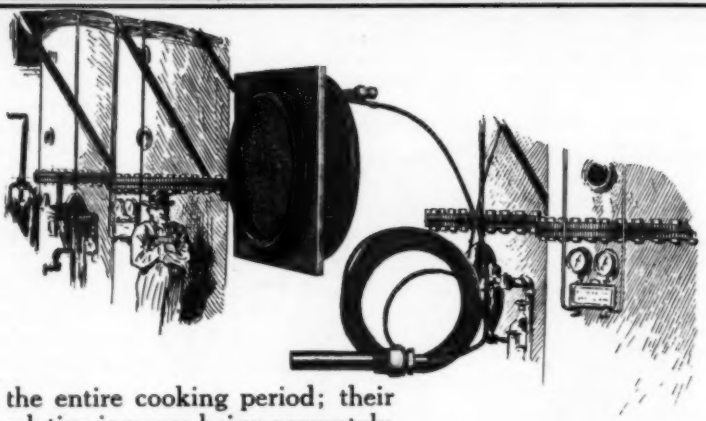

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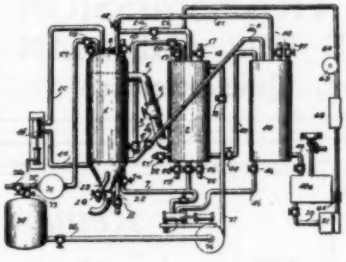
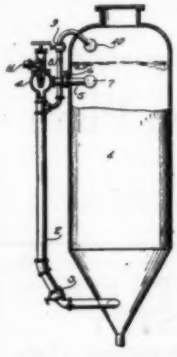
the tearing length is 6240 meters in the length, 3040 meters across the paper sheet, the average being 4640 meters and the weight of the paper being 43 grams per square meter. After sizing, the weight of the paper is 48.7 grams per square meter and the tearing length is 8515 in the length and 3990 in the width, the average being 6252 meters. La Papetrie, volume 48, pages 810ff.

Paper Pulp Process

UNITED STATES Patents No. 1,633,730 (a) and 1,633,731 (b) are concerned with a process for the manufacture of paper pulp in apparatus which is shown in the accompanying illustration. The process consists in the removal of the air that is contained in the material that is to be treated, and then treating this air-freed material with liquor which is charged with volatile extractives of plant material. The so-treated material is then subjected to a second digestive operation with a renewed and strengthened liquor which contains the solvent extractives. The second patent covers the process of making the liquor which is charged with volatile extractives of plant material by treatment of the plant material with soda, etc.

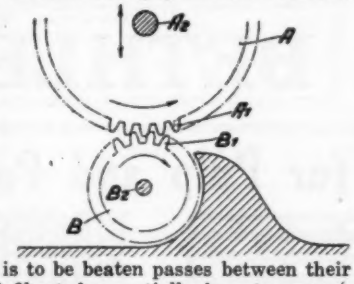




The actual process of making the pulp is patented in United States Patent No. 1,633,732, which is carried out in the apparatus shown in the accompanying illustration. This process of making pulp from fibrous material consists in cooking the material in a digester with a heated liquor under pressure and with a space above the body of the liquor. The gases and the volatile extractives are withdrawn from this space and liquor from the upper portion of the body of liquor in the digestor as well, this being accomplished under pressure. Then the volatile extractives and gases are mixed together and returned to the lower body of liquor in the digester. This is accomplished through the external pipe (2), as seen in the figure.

Beater Improvements

GERMAN Patent No. 443,537 is concerned with the beating arrangement in a beater as shown in the accompanying illustration. The beater roll (A) and the rotatable bedplate (B) are provided with beating members which make contact with one another and which are built in the form of ribs, blocks, pegs and the like. The contact between these beating members is similar to that which takes place between the teeth on gears. The stock which is to be beaten passes between their sides, and the stock is defibrated essentially in a transverse direction. The bedplate roll can be braked and this roll can be given a different speed of rotation than the beater roll itself.



Measuring the Freeness of Wood Pulp

THE various conditions that must be observed in order to obtain concurrent results with the aid of the Schopper-Riegler freeness tester are established. The accuracy of the customary testing process is criticized and the conditions which must be fulfilled in order to develop a standard testing method are described. The new method is said to be more accurate and shorter than the one which has commonly been used up to the present time.

Thus the influences which affect the various experimental conditions were studied. A correction curve is given for converting the results to the basis of 20 degrees C. By using a pressure suction filter in place of pressing the pulp by hand or by means of a felt, it was possible to obtain results of increased accuracy. The Canadian standard method is also described and a constructive improvement of the Schopper apparatus is given which removes the inconsistencies of the Canadian apparatus. Der Papierfabrikant (Fest und Ausland Nummer), 1927, pages 45-60.

Preparing Soda Pulp

IN THE production of wood pulp, black soda ash is leached and lime is slaked concomitantly in the same liquid, the mixture is continuously causticized, the causticized product is separated into clear liquid and sludge, and the wood is treated with the clear liquid to produce pulp magma. The black ash, lime and slaking liquid are introduced into the slaking pot (6) and from thence to the causticizer (10), the caustic liquid being passed through a decanter (30) in order

FIG.1.

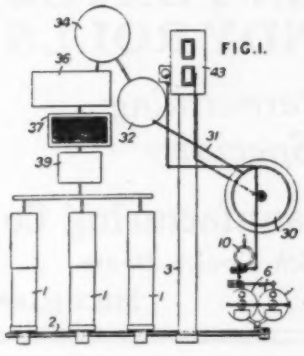
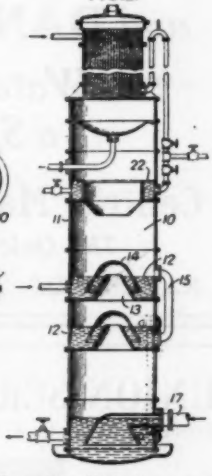


FIG.2.



to separate the sludge, and the clear liquid being removed through a pipe (31) to a storage tank (32) and digester (34). The sludge is delivered to filters (43), the solid matter, comprising calcium carbonate and carbon, being removed to a rotary kiln (3) for calcination, and the resulting lime is deposited upon a conveyor (2) which takes it to the slaking pots (6).

From the digester (34) the pulp and caustic liquid are conducted into a tank (36) and separated by means of a rotary filter and washing device (37), the separated liquid passing to an evaporator (39) and thence to rotating furnaces (1) wherein it is converted into black ash and deposited upon a conveyor (2). The causticizer preferably comprises a vertical casing (11) containing a number of reaction pans (12) each provided with an upwardly extending flue (13) and a mushroom head (14), an overflow pipe (15) being connected to each of the upper pans. The mixture from the slaking pots (6) is fed into the highest pan and steam or hot air is blown in through a pipe (17) at the bottom. Additional alkali liquid may be added to the causticizer, the liquid, which may be cooled by passing it through a condenser, being fed into an annular trough (22) above the highest pan. British Patent No. 269,256.

Cylinders in Paper Making Machine

IN WET press rolls, the top roll is made of iron or other metal and is covered with a pitted sleeve of ebonite which is obtained by mixing the rubber before vulcanization with small particles of a soluble salt or other suitable material, which can be washed out with water or other solvent. As suitable materials are mentioned sodium chloride, barium chloride, sodium carbonate, potassium chloride, Iceland spar,

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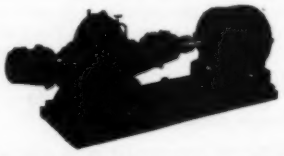

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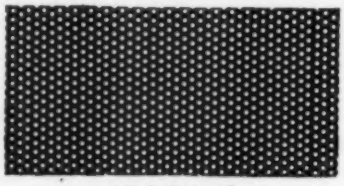
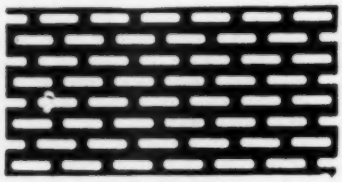
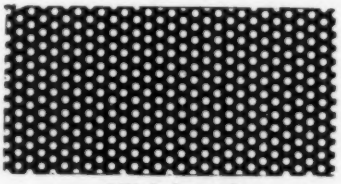


.065 inch round



⅜ x ½ inch Slots



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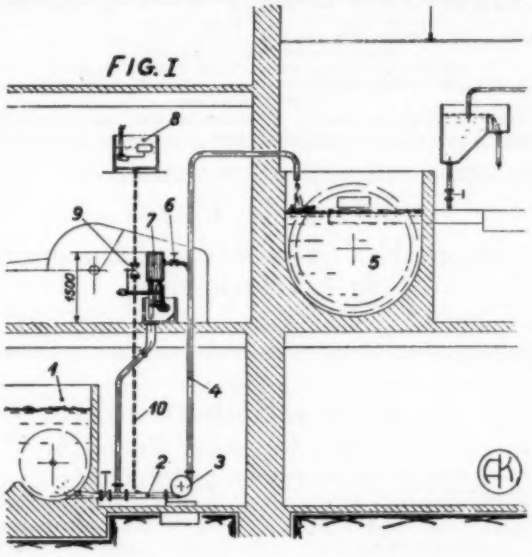
marble, zinc oxide, barium carbonate, small crystals of greater length than breath and iron wire. British Patent No. 268,871.

Automatic Regulation of Stock Density

THE apparatus shown in the following illustrations will regulate the density of the stock that is used in the manufacture of paper with an accuracy of one tenth of one per cent, so that, when the speed of the paper making machine is maintained constant, there will be no variation in the weight of the paper produced.

The stock is sucked out of the chest (1) through the pipe



(2) by means of the pump (3) and this stock is then carried along through the pipe (4) to the machine chest (5). The arm (6) from the pipe (4) feeds the consistency regulator (7).

A certain amount of diluting water is added to the quantity of stock that is sucked out by the pump (3) from the back water box (8) through the automatically controlled valve (9), the flow of water being constant. This quantity of diluting water is automatically regulated by means of the regulator (7) and is increased or decreased almost momentarily in accordance with the variations in the consistency of the paper stock.

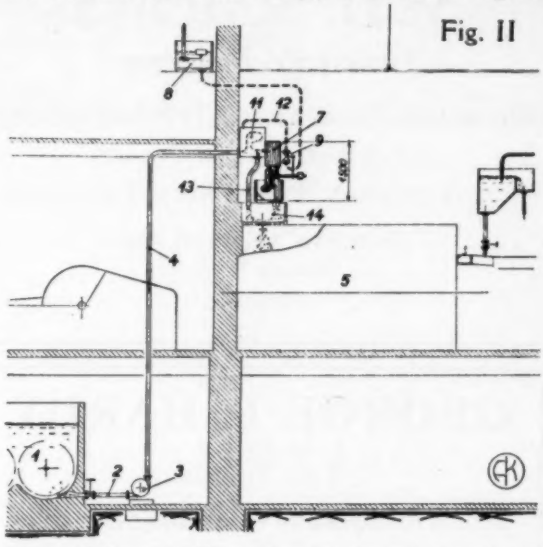
The stock pump (3), due to the arrangement of the regulator, does not have to develop a greater output and to be sure has to deliver just the additional amount of stock which flows through the arm (6) and the regulator (7) and the connection (10) and is added to the pump. The pump (3) mixes the stock and the diluting water together, which is a very important matter for the accurate working of the regulator.

In Fig. 2, there is shown a regulator which is placed on the machine stuff chest. The pump (3) sucks the stock through the pipe (2) from the box (1) and forces it through the pipe (4) to the mixing box (11).

The diluting water runs out of the back water box (8) in a constant flow in a quantity which is controlled by the regulating valve (9), the stock passing through the pipe (12) to the mixing box (11) and then mixes with the entire amount of stock in this box, the mixing being very thorough. The mixing box (11) therefore divides the current of stock and allows a portion of it to flow through the regulator (7) and the remainder through the pipe (13) direct into the stock distributing box (14).

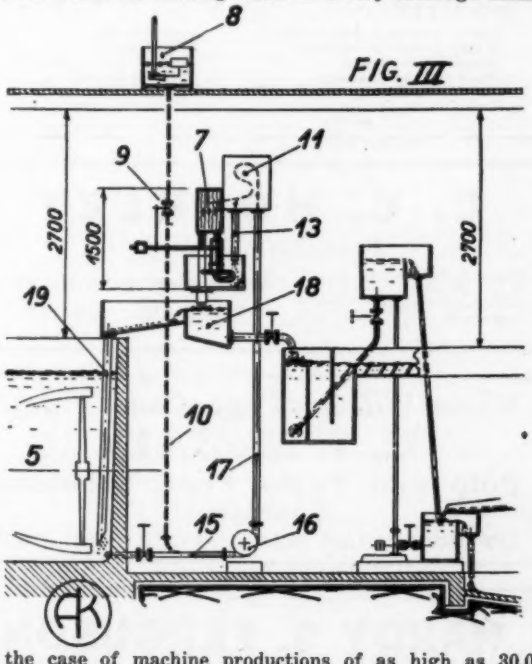
In this arrangement of the regulator there can be no backflow of the stock, so that the pump (3) is not called upon to do additional work.

In case there is a space of about eight to ten feet above the upper portion of the machine stuff chest, then the arrangement of the regulator may be as shown in figure 3. The pump (16) sucks the machine-ready stock from the machine box (5) through the pipe (15) and forces it through the pipe (17) to the mixing box (11). The diluting water runs out of the back water box (8) in an amount regulated



by means of the controlling valve (9) through the pipe (10) and to the pump suction pipe (5).

Not only the pump (16) but also the mixing box (11) mixes the stock and the diluting water in a very thorough manner.



In the case of machine productions of as high as 30,000 kilograms per day (about 60,000 pounds) the entire quantity of stock runs out of the mixing box (11) through the regulator (7) into the stock regulator (18), while in greater productions a portion of the stream of stock is directed through the pipe (13) directly into the stock regulating box (18). The small amount of overflow from the latter box is conducted to the suction pipe through the pipe (19). Zellstoff and Papier, 1927, pages 232-235.

The Dorr Company, engineers at 247 Park Ave., N. Y. C., announce that Mr. A. Anable, for several years connected with its Equipment Sales Dept., was appointed to the position of Director of Publicity on August 1st.

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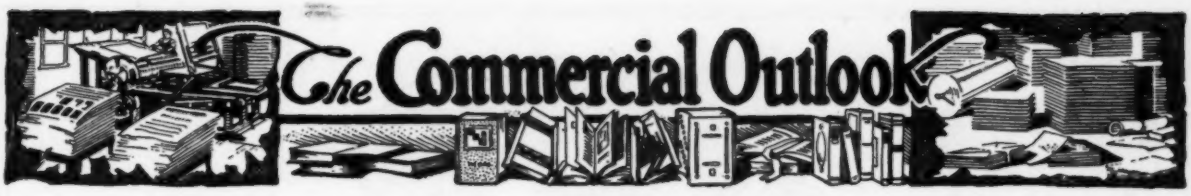


New York, August 1, 1927.

IT IS not uncommon for the paper market to slow down in midsummer, and it can be said that it is running true to form at present. And yet, judging from all the reports received and indications observable, business in paper of most classes at this time is livelier than ordinarily is the case at this period of the year. Probably there is a reason for this—a very salient one. Consumers and jobbers for some time past have been buying in strict hand-to-mouth fashion, and have been carrying very little or no stock to amount to anything; consequently it is necessary for them to keep more or less in evidence as buyers right along, so that even though the volume of demand has decreased and a majority of orders call for rather small amounts of paper, business is developing in comparatively good volume and in a steady manner.

The situation otherwise is marked by a lack of feature unless it is the full maintenance of prices. Not in a lengthy time have prices of paper been more stabilized than they are at present. There is scarcely any fluctuation from day to day or week to week. Manufacturers apparently feel confident that prices are low enough, based on prevailing production costs, and consumers and jobbers appear satisfied with the present level of market quotations so they are not pressing for cheaper rates. This is a factor which no doubt is helping to create business during the "dog-days" period as consumers and converters in frequent instances are looking ahead a bit and are making commitments with mills against supplies they are reasonably sure they will require in the fall and early winter. It is reported, in fact, that paper mills in numerous cases are well booked up on orders, that they have a larger amount of forward business than in a long while, and although most mills are now running on summer schedule and are not producing in anything like the tonnage of busier times of the year, they are looking for excellent market conditions and an active demand for paper later in the year.

Production of paper in the United States in May showed a decline equivalent to 3 per cent as compared with the preceding month, according to the monthly statistical summary compiled and issued by the American Paper and Pulp Association. The output in May totaled 543,592 net tons of all grades of paper and board, contrasted with 558,412 tons in April, 596,448 tons in March, 525,896 tons in February, and 515,603 tons in January. Mill stocks of paper increased somewhat during May, amounting to a total of 253,392 tons at the end of that month, contrasted with 244,969 tons a month previous, and 246,783 tons at the end of March. Shipments from mills in May aggregated 535,195 tons, compared with 556,503 tons in the preceding month, and 587,096 tons in March.

Production of newsprint in the United States and Canada continued on a high level in June although slightly less was produced in that month than in May, according to the monthly statistical review of the News print Service Bureau. During June production in Canada reached 170,590 tons and shipments from mills were 168,841 tons. Production in the United States was 125,284 tons and shipments 122,377 tons, making a total United States and Canadian output of 295,874 tons and shipments of 291,218 tons, compared with 299,214 tons produced and 297,453 tons shipped in May. During June 16,627 tons of newsprint were made in Newfoundland and 1,266 tons in Mexico, so that the total North American production for the month amounted to 313,767 tons, against 316,628 tons in the preceding month.

The Canadian mills produced 102,920 tons more of newsprint in the first six months of 1927 than in 1926, which was an increase of 12 per cent. The United States production was 72,797 tons, or 9 per cent, less than the first six months of last year; that in Newfoundland 34,119 tons, or 40 per cent, more, and in Mexico 1,426 tons, or 23 per cent, more, making a total North American increase of 65,668 tons, or 4 per cent. During June the Canadian mills operated at 84.7 per cent of rated capacity and the United States mills at 82.9 per cent. Stocks of newsprint at Canadian mills totaled 28,851 tons at the end of June and at United States mills 26,549 tons, making a combined total of 55,400 tons, which was equivalent to 4.1 days' average production.

Box board production recorded a fairly sharp gain in June over the preceding month. Mills of the United States produced a total of 214,681 tons of board of all kinds in June, against 199,185 tons in May last, and compared with 221,909 tons in June, 1926. The June output brought the total for the first six months of this year up to 1,202,181 tons, contrasted with 1,257,185 tons in the corresponding time a year ago. Board mills produced at 85.2 per cent of their rated capacity in June, against 81.5 per cent in May last. Orders received for board by manufacturers during June called for a total of 215,135 tons, against 192,061 tons in the preceding month, while unfilled orders at the end of June were for 95,839 tons, compared with 93,748 tons a month previous. Shipments of board from mills in June aggregated 211,223 tons, contrasted with 199,982 tons in May, and stocks at mills at the end of June amounted to 52,751 tons, against 49,144 tons at the end of the preceding month. Board mills consumed a total of 179,835 tons of waste paper in June, compared with 192,327 tons in May, and had stocks on hand totaling 151,731 tons at the end of June, against 149,838 tons a month before, according to the United States Department of Commerce's monthly statistical report on the board industry.

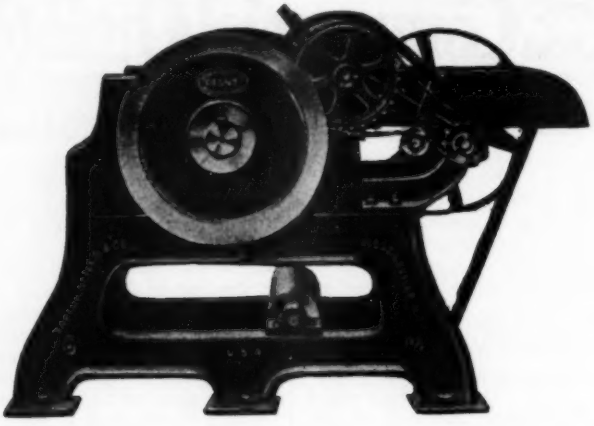
The wholesale index number for the paper and pulp industry for May, 1927, was 152.7, compared with 154.8 for April last, and 175.3 for May last year, taking 1919 at 100 per cent, according to the United States Department of Commerce.

Newsprint consumption has eased off to some extent as usually is the case during the summer season. The market tone continues steady, however, and no alteration in quotations has been noted, nor is any expected over the next few months despite the talk anent the over-production of print paper. Demand for wrapping paper is holding up well and has shown some quickening recently since consumers began to put in supplies against their fall requirements. Prices are well maintained and display a firm undertone. Tissues are in fair call and steady in price. Most of the orders being received for fine papers call for small lots but in the aggregate business is of fair volume, and quotations are steady. Demand for building papers has been rather disappointing and it is reported mills making these grades are operating only at around 60 to 65 per cent of capacity. Book paper is moving freely and at maintained quotations, while demand for fancy papers for box-covering purposes has increased quite noticeably in the last several weeks. Box boards are in a livelier market position than in some while and prices have stiffened slightly to where mills in the East quote filled news board at $47.50 a ton delivered in New York City and chip board at $45.

W. E. Greene To Make Survey Abroad

W. E. Greene of the W. E. Greene Corporation, Woolworth Bldg., New York, sails on the S. S. Stockholm to make a personal survey of the Scandinavian paper mills.

It is Mr. Greene's intention to visit all of the larger paper producing centers, and bring the new developments in the use of rubber covered rolls to these Scandinavian paper centers. He will also stress the use of "Spherite" rubber stuff pump balls, "Tannite" deckle straps, suction box rubbers and other products used in the paper industry.



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GOOD RAGS FOR PAPER MILLS NEW CUTTINGS

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Domestic Raw Materials

Papermaking Rags

The market for papermaking rags is characterized by an easy tone, and it appears as if the price position is altogether in favor of buyers, which is to say that the trend in market values is downward and that consumers are accomplishing purchases at their own prices so long as they are willing to make bids within reasonable bounds. It is not uncommon for the market to show weakness in midsummer. Usually at this time paper manufacturers are engaging in restricted buying, and the market develops a soft tone. The situation at present, however, seems a little easier than ordinarily is the case. There has been limited demand for the past several months, and despite the prevalance of some bullish factors, prices have showed an almost constant downtrend with the end of the decline apparently not yet in sight.

The easiness noted is especially marked in the low qualities of rags for papermaking. Roofing stock has sagged gradually in price until market levels now are lower than have been witnessed in some time, and unless something at the moment unforseen occurs it would appear that prices of this class of rags will go lower. The basis of the quietness in the roofing rag market is none other than that roofing felt mills haven't the business in their commodity necessitating their buying raw material excepting on a small scale. The building movement has slumped, without a question, particularly as concerns individual dwelling buildings in the construction of which most of the roofing felt consumed in this country is used, and felt mills have found it imperative to curtail their production. Consequently they have been in the market for fewer rags, and notwithstanding the likelihood that available supplies of such rags in the United States and at European sources are smaller than has been known in some years, prices have displayed a weak tone and have slid off in consistent fashion as a result of the limited consuming demand.

Domestic roofing rags are quoted at 1.65 cents a pound f. o. b. New York for No. 1 packing or cloth strippings, and at 1.35 cents for No. 2 stock, and it is probable some purchases have been made by consumers at below these prices. Foreign dark colored cottons, which correspond with our No. 2 packing of roofing stock, have declined in price to where sales have been made for forward shipment from abroad at 1.50 and 1.55 cents a pound ex dock New York and other American Atlantic ports, and foreign linsey garments are down in price to 1.65 and 1.70 cents ex dock.

New cuttings appear to be holding their price level fairly well though such changes as have occurred have been in a downward direction. Certain factors in the trade have exerted pressure to sell, which has weakened the price tone to some extent, but on the other hand the production of cuttings has been low owing to curtailed operations of clothing factories and this has aided in supporting prices. Dealers quote 12 cents or slightly higher f. o. b. New York for No. 1 white shirt cuttings, 5.75 cents for fancy shirt cuttings, 7 cents for light silesias, 6.75 cents for blue overall cuttings, 4.50 cents for No. 1 washables, 5 cents for black silesias, and 8.75 cents for white lawns.

Demand for old white rags is spotty. The slow period for fine paper manufacturers in New England has been reflected in a falling away of orders for such grades, and most of the current movement is against contracts made some while ago. Prices are on the easy side, with No. 1 repacked whites reported available at 6 to 6.50 cents a pound at dealers' shipping points, and No. 2 repacked at 3 cents. Prices of whites vary considerably, depending on the quality of packing. Repacked thirds and blues are selling on a price range of about 2 to 2.30 cents a pound at shipping points, according to quality, and rough blues at 1.60 to 1.75 cents per pound.

Paper manufacturers are absorbing the higher grades of foreign rags in a reserved manner only. Prices of most rags have eased abroad. European dealers apparently have grown weary of waiting for orders and have reduced quotations in an effort to stimulate buying. There is little demand for foreign new cuttings, and old white and blue cottons and linens are wanted only in a spasmodic way by consumers against urgent requirements.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.00-12.25
White shirt cuttings, No. 2	7.00- 8.00
Fancy shirt cuttings	5.50- 5.75
Washables, No. 1	4.25- 4.50
Unbleached muslin	9.25- 9.50
White lawns	8.50- 8.75
Overall cuttings, blue	6.50- 6.75
Black silesias	4.75- 5.00
Light flannelettes	8.25- 8.50
Canton flannels, bleached	8.25- 8.50
Canton flannels, unbleached	7.50- 7.75
Shoe cuttings, bleached	8.25- 8.50
Shoe cuttings, unbleached	6.75- 7.00
Light silesias	6.75- 7.00
O. D. khaki cuttings	5.25- 5.50
Mixed khaki cuttings	4.75- 5.00
Corduroy cuttings	3.00- 3.25
Cottonade cuttings	3.75- 4.00
Linens, No. 1 white, foreign	13.00-14.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.00- 6.50
Whites, No. 2 repacked	2.75- 3.25
Whites, house soiled	2.00- 2.25
Whites, street soiled	1.85- 2.00
Lace curtains	5.75- 6.00
Thirds and blues, rough	1.60- 1.75
Thirds and blues, repacked	2.00- 2.30
Black stockings	3.75- 4.00
Cotton canvas, No. 1	4.75- 5.00
White cotton batting	2.75- 3.00
Roofing, No. 1 (cloth strippings)	1.60- 1.70
Roofing No. 2	1.30- 1.40
Linsey, garments, foreign	1.65- 1.75
Dark colored cottons, foreign	1.50- 1.60
Blue linens, foreign	3.75- 4.00
Gray linens, foreign	4.00- 4.25
White linens, foreign	7.50- 8.00
Light prints, extra foreign	1.75- 2.00

Rope and Bagging

Prices of both old rope and scrap bagging have recorded a slight decline over the past several weeks. Due to a slowing down of demand from paper mills, the market has developed a somewhat softer undertone, and while the changes in prices have been rather slight, at the same time the trend has been downward, and paper manufacturers now are purchasing these raw materials at slightly less cost than recently.

Dealers in old rope put much stress on the limited supplies of good quality rope reaching the market from producing and collecting sources. Nevertheless the leading paper mill buyers have reduced their prices about a quarter of a cent per pound and sales of No. 1 domestic old manila rope

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have been reported at as low as 4 cents a pound f. o. b. shipping points, and of imported No. 1 rope at 3.50 cents ex dock New York. Strings are in relatively good demand, and mixed strings are bringing 1.10 to 1.25 cents a pound at dealers' points, depending on the quality of packing.

No. 1 scrap bagging has eased in price to where papermakers rarely are obliged to grant above 1.60 to 1.65 cents a pound f. o. b. shipping points for the supplies desired. Roofing bagging is quoted at 1.20 to 1.30 cents a pound at dealers' points of shipment. Gunny bagging is quiet.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	1.75-2.00
Gunny, No. 1 foreign	1.75-1.90
Scrap bagging, No. 1	1.60-1.70
Roofing bagging	1.20-1.30
Wool tares, heavy	2.25-2.50
Wool tares, light	2.00-2.25
Manila ropes, No. 1 foreign	3.50-3.75
Manila ropes, No. 1 domestic	4.00-4.25
Sisal strings	1.75-2.00
Mixed strings	1.10-1.25

Old Paper

Although the old paper market, from the dealer's standpoint, is in far from a satisfactory condition, there are visible signs of improvement in most quarters. It is quite apparent demand has broadened a bit. Board mills, presumably enjoying a better demand for their product, have been more actively in evidence as buyers of the low grades of waste paper, and certain of the better qualities have moved in larger tonnage. The expansion in demand has resulted in at least a slight strengthening of market prices. There have been no wide changes but the trend is upward, and considerable complaint now is heard in the trade regarding the difficulty experienced in locating all the supply needed to cover mill commitments, owing to packers having so heavily curtailed their collections because of the low prices ruling for so long a time.

There has been a steady movement of No. 1 heavy books and the prices granted by mills have been between 1.20 and 1.30 cents a pound f. o. b. New York. Soft white shavings are in fair demand on a price range of 2.65 to 2.85 cents per pound at shipping points, according to the quality of packing, and old No. 1 kraft is fetching 1.90 to 2.10 cents a pound at dealers' shipping points. Hard white shavings are in relatively slow call and are reported available at 2.75 to 3 cents a pound f. o. b. New York. Folded news is selling at 50 cents per hundred pounds f. o. b. New York, and No. 1 mixed paper at 40 cents, with substantially higher prices prevailing in the Middle West.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	2.75-3.00
Hard white shavings, No. 2	2.50-2.75
Soft white shavings	2.65-2.85
Colored shavings	1.00-1.25
Heavy book, No. 1	1.20-1.30
Crumpled book, No. 1	.95-1.00
Ledger stock	1.40-1.65
Kraft, No. 1	1.90-2.10
New kraft cuttings	2.50-2.75
Manilas, No. 1	.65- .80
White blank news	1.50-1.60
Overissue news, No. 1	.55- .75
Folded news	.50- .65
Sulphite mill wrappings	.65- .75
Old corrugated boxes	.60- .70
New corrugated box cuttings	.75- .85
Mixed paper, No. 1	.40- .60
Common paper	.30- .40

Pulpwood

Reports tell of a somewhat limited demand for pulpwood at present. There is a steady movement of supplies on con-

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C. K. Williams Company, Easton, Pa., Emeryvilla, Cal., Malaga, Spain.
Georgia-Louisiana Company, East Point, Ga., Merrero, La.
Superior Pine Products Company, Fargo, Ga., Tarver, Ga.
Empire Size & Chemical Co., Albany, N. Y.
Adirondack Mineral Co., Carthage, N. Y.
Superior Sizing Company, Lockport, N. Y.
Paper Makers Importing Co., Easton, Pa., St. Austell, Cornwall, Eng.
Vera Chemical Co. of Canada, Ltd., Freeman, Ontario.
Vera Chemical Corporation, Stoneham, Mass.
Vera Chemical Company, North Milwaukee, Wis.
John Regnier & Son Company, Boston, Mass.
George P. Mepham & Company, East St. Louis, Ill.
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tract, and occasional sales involving rather important tonnage are reported, but generally the market is quiet and buyers are holding back when obliged to cover actual needs. Prices are on the easy side, due to the slow demand.

Exports of pulpwood from Canada during the first six months of this year reached a total of 837,876 cords, valued at $8,087,173, showing a considerable increase in quantity and value over the shipments in the corresponding time last year amounting to 625,454 cords of a value of $5,991,068.

Mechanical Pulp

The market for mechanical wood pulp presents a weak, dull and more or less disorganized situation. There is very little demand of consequence for the commodity. Consumers are in a position where they are well supplied, from all indications, and where they are enabled to grind about all the pulp they require so that they are engaging in little buying in the open market. It is problematical at just how low prices purchases of ground wood can be effected. It is known definitely that offers have been in the market of stored ground wood at $24 a ton f. o. b. pulp mills in Canada, and the probabilities are buyers have succeeded in getting some supply well below this price level. There have been reports, in fact, of transactions at as low as $20 a ton at grinding centers in Canada though purchases at this figure have not been actually confirmed. Domestic ground wood is quoted nominally around $27 a ton f. o. b. grinding plants, while foreign ground wood of Scandinavian origin for forward shipment from abroad can be bought at $32 a ton for dry pulp ex dock American Atlantic ports and perhaps at less.

Production of mechanical pulp in the United States in May last amounted to 104,125 net tons, compared with 107,692 tons produced in the preceding month, according to the American Paper and Pulp Association. Mill stocks at the end of May aggregated 158,445 tons, against 143,998 tons at the end of April. These figures—especially the stock figures—would seem to offer some explanation for the weak condition of the market.

Chemical Pulp

The domestic wood pulp producing industry is feeling to no little degree the unfavorable market position of imported pulp. With prices of foreign pulps on lower levels than have been witnessed in years, it is not surprising that paper and board manufacturers are directing most of their attention to these grades, and are buying less domestic pulp—generally confining their orders for domestic grades to amounts absolutely required in uses where they hesitate to substitute foreign pulp. Generally speaking, producers are maintaining quotations on a fairly steady level. This is particularly true concerning bleached sulphite, leading manufacturers of which continue to quote 4 to 4.75 cents a pound for No. 1 quality bleached. No. 1 strong unbleached sulphite of book paper grade is quoted at around 2.90 cents a pound f. o. b. pulp mills, and of news grade at 2.50 to 2.75 cents. Bleached soda pulp is selling at between 3.25 and 3.50 cents a pound at pulp plants, and No. 1 domestic kraft pulp at 2.75 to 3 cents.

During May mills in the United States produced 107,424 net tons of chemical pulp of all classes, contrasted with 107,620 tons in April, and had stocks on hand totaling 19,561 tons at the end of May, against 19,827 tons a month previous, according to the monthly report of the American Paper and Pulp Association.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.00-3.25
Unbleached sulphite, No. 1 strong (news grade)	2.50-2.75
Unbleached sulphite, No. 1 book	2.80-3.00
Soda pulp, bleached	3.25-3.50
Mitscherlich, unbleached	3.00-3.25
Kraft, No. 1	2.75-3.00
Screenings, refined	1.40-1.60

Chemicals

Demand for bleaching powder is reported good and quotations are well maintained at 2 to 2.40 cents per pound f. o. b.

"Distinguished for its high test and uniform quality."

Soda Ash

Caustic Soda

Bicarbonate of Soda

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"The ladder of life is full of splinters but they always prick the hardest when we are sliding down"

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Advance Bag & Paper Co. 7s, 1943	@	105
Champion Coated Paper Co. 6s	@	100½
Central Paper Co. 7s, 1933	@	85
Donnacona Paper Co. 6s, 1940	@	101
Escanaba Paper Co. 6s, 1935	@	94½
Filer Fibre Company 6s	@	95
Michigan Tanning & Extract 6½s, 1939	@	69
Oxford Paper Co. 6s, 1947	@	104
St. Croix Paper Co. 5s, 1927	@	99½
Stevens & Thompson Paper Co. 6s, 1942	@	94
Ticonderoga Pulp & Paper Co. 6s, 1940	@	99
Tait Paper & Color Industries 6s, 1934	@	90
West Virginia Pulp & Paper Co. 6s, 1942	@	52

WE WILL SELL

Atlas Plywood Co. 6½s, 1940	@	99
Eastern Manufacturing Co. 7s, 1938	@	91
Eastern Manufacturing Co. 1st Pfd.	@	28
Great Northern Paper Co.	@	64
Quebec Pulp & Paper Co. Pfd.	@	33
St. Regis Paper Co. 6s, 1931	@	100½

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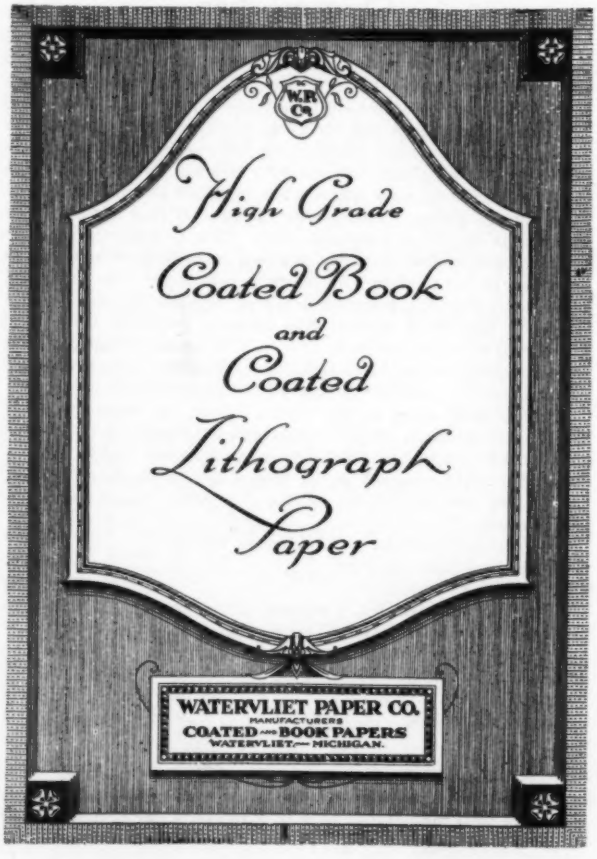

New Papers

Writing—	
White rag	15-40
White sulphite	9-30
Colored rag	15-40
Colored sulphite	8-30
Ledger—	
White rag	16-40
White sulphite	9-30
Colored sulphite	8-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	7-30
Colored sulphite	7-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.40- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.25-15.00
Newsprint—	
Rolls, contract	3.25-.....
Rolls, transient	3.50-.....
Sheets	3.65- 3.80
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.75- .85
No. 2 white, 24x36	.70- .80
No. 1 manila, 24x36	.70- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 kraft	6.00- 6.50
No. 2 kraft	5.25- 5.50
Southern kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	50.00-55.00
Straw	52.50-57.50
Plain chip	45.00-47.50
White coated chip	57.50-62.50
Manila coated chip	52.50-57.50
Binder's board	70.00-75.00

Chemicals

(*Continued from page 867*)

works, according to quantity and shipment. Caustic soda prices are steady on a level of 3 to 3.10 cents per pound at works, with slightly higher usually asked for spot deliveries, and soda ash is enjoying a steady market with 1.32½ cents a pound quoted for the product packed in bags. Brimestone is steady quotably at $18 to $19 per long ton at mines.

Average quotations are as follows:

Alum, lump ammonia	3.50 - 3.75
Alum, lump starch	3.75 - 4.00
Blanc fixe, powder	4.00 - 4.25
Bleaching powder	2.00 - 2.40
Brimstone (long ton, at mine)	18.00 -19.00
Casein (duty paid)	17.50 -19.00
Caustic soda, spot delivery	3.00 - 3.10
China clay, domestic washed	8.00 -10.00
China clay, foreign	14.00 -20.00
Rosin, grade E	9.90 -.....
Satin white	2.00 - 2.25
Soda ash, 50 per cent light (bags)	1.32½-.....
Starch, papermakers', in bags	3.07 -.....
Talc (ton)	16.00 -18.00

Market Quotations

Issued by H. D. Knox & Co., 44 Broad St., New York

The quotations mentioned below are more or less nominal in some cases owing to the inactivity of the securities, but we invite inquiries on these and other allied industries' securities when we will endeavor to furnish actual markets.

BONDS	BID	ASKED
Abitibi Fibre Co. 6s, 1947	97	98½
Abitibi Power & Paper Co. 6s, 1940	104½	105½
Abitibi Power & Paper Co. 6s, 1930	99½	100½
Abitibi Power & Paper Co. 6s, 1950	100	101
Advance Bag & Paper Co. 7s, 1943	105	106
A. P. W. Pulp & Paper Co. 7s, 1945	101	103
American Sales Book Co. 6s, 1939	102	
American Writing Paper Co. 6s, 1947	86	88
American Writing Paper Co. 6s,	70	72
American Book Co. 6s, 1928	99¾	101
Beaver Products Co. 1st 7½s, 1942	109	
Beaver Board Products Co. 8s, 1942	98	100
Berkshire Hills Paper Co. 8s, 1941		60
British Columbia Pulp & Paper Co. 6s, 1950	88	92
Belgo Canadian Paper Co. 6s, 1943	101	103
Bryant Paper Co. 6s, 1942	101	103
Brown Company 5½, 1946	98¼	99¼
Brompton Pulp & Paper Co. 6s, 1935	100	102
Brompton Pulp & Paper Co. 6s, 1946	99	101
Cady Lumber Co. 6½s, 1939	85	92
Canada Paper Co. 6s, 1938	9½	100½
Canadian Paper Board Co. 7s, 1937	98½	100
Cape Breton Pulp & Paper Co. 6s, 1932	101	103
Celotex Co. 6½s, 1939	100½	102
Central Paper Co. 6½s, 1941	84	85½
Central Paper Co. 7s, 1933	83	85¾
Celotex Co. 6s, 1929	101½	105
Celotex Co. 6s, 1936		97
Champion Fibre Co. 6s, 1941	99	100½
Champion Paper Co. 6s, 1935	95	97
Champion Coated Paper Co. 6s, Serial	100	
Continental Paper Products Co. 6½s, 1943	87	90
Cornell Wood Products Co. 7½s, 1937	101	104
Crown Willamette Paper Co. 6s, 1951	100	
Dells Paper & Pulp Co. 6s, Serial	95	
Donnacona Paper Co. 6s, 1940	101	102
Eastern Mfg. Co. 7s, 1938	89	91
Eddy Paper Co. 7½s, 1931	102	104
Escanaba Paper Co. 6s, 1939	94	
Filer Fiber Co. 7s	95	98
Fort Orange Paper Co. 7s, 1942	96	100
Fort William Paper Co. 6s, 1946	98¼	
Fox River Paper Co. 7s, 1931	100	
Fraser Co. 6s, 1950	98½	99¾
Gair (Robt.) Co. 7s, 1937	104	106
Gilbert Paper Co. 6½s,	90	
Hammermill Paper Co. 6s, 1939	100	103
Hoberg Paper & Fiber Co. 7s, 1937	94	96
Howard Smith Paper Co. 7s, 1941	103½	104½
Howard Smith Paper Co. 6s, 1934	101	103
Industrial Fibre Co. 8s		b. w.
International Paper Co. 6s, 1941	101	103
Itasca Paper Co. 6s	97	
Itasca Paper & Prairie River Co. 5½s	96	
Kalamazoo Vegetable Parchment 6s, 1938	99	
Kieckhefer Container Co. 5½s, 1928-37		b. w.
Lake Superior Paper Co. 6s, 1941	104	
Manitoba Paper Co. 6½s, Serial	98½	99½
Marinette & Menominee Paper Co. 7½s, 1936	103	105
Mead Pulp & Paper Co. 5s	92	96
Menasha Printing & Carton Co. 6½s, 1939	100	
Mengel Co. 7s	103	
Minnesota & Ontario Paper 1st 6s, 1931	97	99
Minnesota & Ontario Paper 6% Notes, 1931	97	99
Minnesota & Ontario Paper 6s, 1950		99¾
Minnesota & Ontario Paper 6s, 1930-35	99	100
Minnesota & Ontario Paper 6s, 1945	99	100
Minnesota & Ontario Paper 6s, 1948	99	100
Monroe Paper Products Co. 7½s, 1932	97	
Munising Paper Co. 6s, Serial	97	100
Mekoosa Edwards Co. 6s	96½	100
Ontario Paper & Pulp Co. 6s, 1931	108½	110
Orona Pulp & Paper Co. 6s, 1943	98	
Orona Pulp & Paper Co. 5s, 1941	96	
Oswego Falls Paper 6s, 1941	99	102
Oxford Paper Co. 6s, 1947	104	
Oxford Miami Paper Co. 6s, 1947	98	102
Paepcke Paper Mills Co. 7s, 1930	100	
Parker Young 6½s, 1944	96½	98
Parsons Pulp & Lumber Co. 7s, 1928	97½	
Paterson Parchment Paper Co. 6s, 1938	101	102

(*Continued on page 877*)

BATHURST LUMBER COMPANY, LIMITED

PRICE & PIERCE, LTD.
17 East 42nd Street, NEW YORK CITY

ARE NOW THE

SELLING AGENTS
for Bathurst Pulp in the United States

Unbleached Sulphite 50 tons daily
Kraft Pulp 50 tons daily

Our pulp is made from Canadian Spruce
We ship in sheets, baled

BATHURST, NEW BRUNSWICK, CANADA

The B.Q. QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

Fresh Monthly Shipments—No Closed Winter Season

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Incorporated
200 FIFTH AVENUE NEW YORK, N. Y.

PERKINS-GOODWIN CO.,

Established 1846

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U. S. AGENTS

FOR

SPAULDING PULP & PAPER CO.,
NEWBERG—ORE.

NORTHWESTERN PULP & PAPER CO.
TACOMA—WASH.

EXPORTS

Exports of paper from the United States during May last showed a slight decline in point of value as compared with the preceding month and were also below the exports in May of last year, according to official statistics compiled and issued by the United States Department of Commerce in Washington. Total exportations of paper of all classes in May reached a value of $2,159,740, against $2,361,841 in April this year, and $2,201,301 in May a year ago.

Exports of newsprint recorded a substantial increase in May contrasted with the preceding month, but were less than in May, 1926, amounting to a total of 2,627,198 pounds of a value of $128,340 in May last, against 2,145,001 pounds of a value of $100,853 in April this year, and 3,806,614 pounds of a value of $179,251 in May last year. The largest shipments in May were to the Philippine Islands, 531,003 pounds; to Cuba, 462,034 pounds, and to South America, 740,786 pounds.

Exportations of book paper, not coated from the United States in May last were 1,242,090 pounds, valued at $111,932, compared with 1,118,746 pounds of a value of $104,367 in the preceding month, and 1,677,023 pounds of a value of $147,874 in May a year ago. Writing paper was exported in May to the amount of 1,474,558 pounds, valued at $191,300, against 792,150 pounds of a value of $131,961 in the same month last year, while wrapping paper exports were 1,850,236 pounds of a value of $146,222 in May, against 3,018,213 pounds of a value of $166,989 in May, 1926. Exports of box board in May totaled 3,815,765 pounds, valued at $126,554, contrasted with 4,098,841 pounds of a value of $120,975 shipped in the same month last year.

IMPORTS

Wood Pulp

Most reports are to the effect that the market for imported wood pulp is quiet, yet there are indications that a fairly sizeable business is transpiring in some quarters. Paper and board manufacturers appear decidedly interested in those brands of sulphite and kraft pulp which they are accustomed to using, and are said to be absorbing supplies of these pulps fairly readily in certain cases, whereas there are numerous offerings of other qualities—and at substantially lower prices—which are being noticeably neglected. This demand situation makes for a rather wide range in market prices as those mill brands which are wanted are holding relatively steady in value, as against a weak condition elsewhere in the market where sellers have pulp which they are anxious to move and for which they experience difficulty locating buyers.

The feeling exists among those on the selling side of the trade that prices are resting at the bottom. Much emphasis is put on the fact that present pulp market price levels are lower than they have been in many years—even under the prices reached during the period of depression back in 1921 when it was an exceedingly hard matter to sell pulp almost regardless of price. The low prices prevailing are said to have resulted in producers in a good many cases curtailing production to a marked degree, and it is believed this will in time cause an upward reaction in market values. Moreover, it is thought that consumers in this country have yet to do a great deal of buying before having their requirements covered into the next open water shipping season from Scandinavia in the spring of 1928, and importers in general feel a spurt of fairly heavy buying will occur in the near future, which likely will make prices stiffen considerably.

Prices have slid off to where they now are on a slightly cheaper level. Strong unbleached sulphite is available at 2.50 cents a pound ex dock New York and other American Atlantic ports for forward shipment from abroad, although on the other hand there are some brands of this class of pulp which are selling readily at 2.70 and 2.75 cents and higher, depending, of course, on quality and to what extent the grade is known and consumed in the United States. Bleached sulphite is quoted at 3.50 cents per pound ex dock as about a low price, with quotations ranging up to 4 cents and higher, while easy bleaching sulphite is around 2.90 cents on the dock and ordinary Mitscherlich unbleached 2.60 cents. Standard prime Swedish kraft pulp is quoted at 2.70 cents but it is said some of the independent mills in Sweden are selling under this price a dollar or two per ton. Ground wood of Scandinavian origin is quoted at about $32 a ton ex dock New York for dry pulp.

There was a big increase in importations of chemical wood pulp into the United States in May as compared with the preceding month. Imports amounted to a total of 104,444 long tons of all grades of chemical, valued at $6,719,173, against 73,763 tons of a value of $4,913,185 in April, and constituted the largest month's imports this year up to June with the lone exception of January when 137,607 tons were imported. The May arrivals brought the total for the first five months of 1927 up to 482,659 tons, giving a monthly average of 96,534 tons, contrasted with an average of 95,358 tons monthly in the same period last year. Ground wood imports in May were 15,372 long tons, valued at $465,754, compared with 17,654 tons of a value of $466,563 imported in the preceding month, and made a total for the first five months of the current year of 81,997 tons, against 96,153 tons in the corresponding time a year ago.

Current market quotations ex dock New York and receipts at the port of New York during July follow:

Bleached sulphite, No. 1	3.50- 4.00
Unbleached sulphite, strong No. 1	2.50- 2.75
Unbleached sulphite, No. 2	2.35- 2.60
Easy bleaching sulphite	2.80- 3.00
Mitscherlich unbleached, genuine	2.90- 3.15
Mitscherlich unbleached, ordinary	2.50- 2.70
Kraft, standard Swedish	2.65- 2.90
Ground wood, per ton (dry)	32.00-34.00

Daniel M. Hicks, Inc., 153 bls. from Hamburg; Bulkley, Dunton & Co., 625 bls. from Hamburg, 2,500 Essvik, 800 Rotterdam, 150 Sundsvall, 3,450 Soderhamn, 1,000 Iggesund, 4,525 Memal and 2,375 Gefle; Johaneson, Wales & Sparre, 155 bls. from Hamburg, 2,910 Hernosand and 2,575 Sundsvall; Lagerloef Trading Co., 777 bls. from Kotka; Perkins-Goodwin Co., 650 bls. from Oslo and 1,400 Gothenburg; Chemical National Bank, 700 bls. from Oslo, 256 Hamburg and 1,500 Iggesund; American Exchange Irving Trust Co., 600 bls. from Oslo and 126 Bremen; J. Andersen & Co., 2,500 bls. from Stugsund, 135 Trieste, 125 Gothenburg, 1,380 Greaker, 8,700 Hernosand, 5,000 Soderhamn and 525 Hamburg; Central Union Trust Co., 700 bls. from Stugsund; Pagel, Horton & Co., 150 bls. from Stugsund and 2,750 Gefle; Price & Pierce, Ltd., 1,200 bls. from Gothenburg; Scandinavian Pulp Agency, 1,250 bls. from Hallstavik, 4,180 Skutskar, 1,250 Stockholm and 2,250 Sundsvall; Central National Bank, 2,000 bls. from Soraker; Buck, Kiaer & Co., 2,400 bls. from Stockholm; Empire Trust Co., 2,000 bls. from Greaker; Atterbury Bros., 250 bls. from Hamburg; A. P. W. Paper Co., 18,129 bls. from Sheet Harbor, N. S.; M. Gottesman & Co., 2,500 bls.

J. ANDERSEN & CO.

21 East 40th Street New York City

Importers of Chemical Pulps
BLEACHED AND UNBLEACHED

Agents for Kellner Partington Paper Pulp Co., Ltd.
Sarpsborg, Norway; Forshaga, and Edsvalla, Sweden

The Pulp and Paper Trading Co.

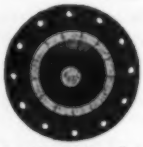
21 East 40th Street New York City

Dealers in
Domestic Chemical and Mechanical Pulps and Paper

AGENTS FOR
J. & J. ROGERS COMPANY, Ausable Forks, N. Y.
E. B. EDDY COMPANY, LTD., Hull, Canada
CANADIAN KRAFT LIMITED, Three Rivers, Canada
Dealers in Waysgamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp
Made by Port Huron Sulphite & Paper Co., Port Huron, Mich.

THE MICHIGAN PIPE COMPANY



Special Flange for Paper Mills.

ADVANTAGES:
Saves Power
No Discoloration
Lasting Qualities
Light in Weight
Cheaper.

Manufacturers of
COMBINATION STEEL AND WOOD PIPE
Office and Factory: Bay City, Michigan
PRODUCTS:
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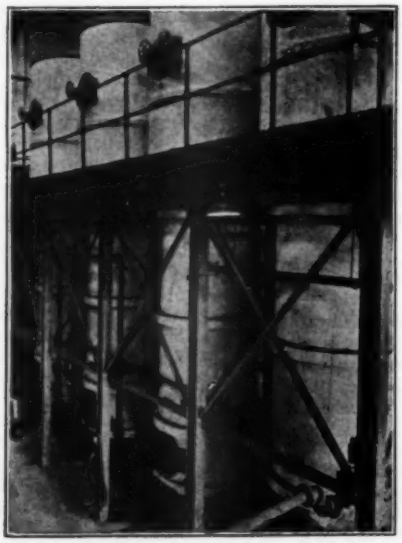
SPECIAL FITTING FOR ACID WORK WRITE FOR CATALOG
Michigan Pipe for Paper Mills
Liquid Conveyed Touches No Metal

Showing the Special Flange Joint, Light in Weight, Specially Desired for Inside Installations. Easy to Take Apart

SERVICE:
We maintain experts who will take entire charge of pipe installations if desired.

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST PAPER CO.
Cloquet, Minn.



NON-FOAMING

MAXIMUM STEAM ECONOMY

NO ENTRAINMENT

SODA and SULPHATE PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

from Sundsvall, 4,000 Sebenico, and 1,000 Iggesund; E. M. Sergeant Co., 700 bls. from Gothenburg; Castle & Overton, 580 bls. from Rotterdam, 547 Gothenburg and 2,375 Memel; Equitable Trust Co., 5,000 bls. from Norrsundet; Order, 1,625 bls. from Viborg, 3,340 Kotka, 200 Sundsvall, 200 Bremen and 3,233 from Finnish ports.

Paper Stock

The month of July witnessed the import of papermaking materials other than wood pulp into the United States on a fair scale, judging from the receipts through the port of New York. Arrivals of rags were small in comparison with a few months ago but there were at least normal quantities of old rope, bagging and miscellaneous paper stock imported, taking the amounts brought in at New York as a criterion.

Imports of all kinds of paper stock other than wood pulp at New York in July, 1927, these data being taken from manifests of steamers reaching that port during the month, follow:

Old Rope

E. J. Keller Co., 714 bls.; United Fruit Co., 6 bls.; Brown Bros. & Co., 910 coils and 408 bls.; International Purchasing Co., 45 bls.; Ellerman's Wilson Line, 133 coils and 15 bls.; R. M. Gray, Inc., 80 coils; Victor Galaup, Inc., 46 bls.; American Express Co., 684 coils; N. E. Berzen, 132 coils and 264 bls.; American Exchange Irving Trust Co., 236 coils and 154 bls.; Alexander H. Searle, Inc., 105 coils; Darmstadt, Scott & Courtney, 192 coils; W. Schall & Co., 113 coils; New York Trust Co., 48 bls.; National Bank of Boston, 68 coils; Order, 157 bls. and 286 coils.

Old Bagging

Bulkley, Dunton & Co., 374 bls.; Darmstadt, Scott & Courtney, 48 bls.; Alfred Bloch & Co., 53 bls.; Chase National Bank, 415 bls.; W. T. Grant & Co., 170 bls.; Union National Bank, 144 bls.; American Exchange Irving Trust Co., 110 bls.; E. J. Keller Co., 496 bls.; E. Butterworth & Co., 189 bls.; National Bank of Commerce, 63 bls.; S. Birkenstein & Sons, 128 bls.; Castle & Overton, 220 bls.; Manufacturers Trust Co., 116 bls.; Order, 280 bls.

Rags

Castle & Overton, 382 bls.; Darmstadt, Scott & Courtney, 228 bls.; J. Cohen & Son Co., 67 bls.; Bulkley, Dunton & Co., 454 bls.; Salomon Bros. & Co., 158 bls.; Bliss Dallett & Co., 15 bls.; Forte Moran & Co., 19 bls.; I. Hinerfeld, 9 bls.; Robt. Bishop Mfg. Co., 181 bls.; Mystic Waste Co., 20 bls.; Victor Galaup, Inc., 770 bls.; A. C. Fetterolf, 39 bls.; David Galloway & Co., 60 bls.; William Steck & Co., 140 bls.; Jaffe Products Co., 69 bls.; Daniel M. Hicks, Inc., 90 bls.; Atlas Waste Mfg. Co., 20 bls.; J. A. Brookman Co., 50 bls.; P. Garvan, Inc., 126 bls.; E. Butterworth & Co., 191 bls.; Katzenstein & Keene, 218 bls.; Alexander H. Searle, Inc., 9 bls.; E. Mayer, 109 bls.; A. Resnati, 50 bls.; E. A. Stone Co., 354 bls.; General Fiber Co., 20 bls.; Lombard Trading Co., 32 bls.; E. J. Keller Co., 1,618 bls.; State Bank, 33 bls.; Equitable Trust Co., 610 bls.; American Exchange Irving Trust Co., 230 bls.; Chase National Bank, 2,194 bls.; Banca Commerciale Italiana, 383 bls.; National City Bank, 368 bls.; Union National Bank, 152 bls.; New York Trust Co., 232 bls.; Second National Bank of Boston, 70 bls.; Gallagher & Ascher, 31 bls.; United American Lines, 57 bls.; R. F. Downing & Co., 201 bls.; A. W. Fenton, Inc., 136 bls.; Amsinck, Sonne & Co., 205 bls.; Kidder Peabody Acceptance Corp., 28 bls.; W. Schall & Co., 17 bls.; Order, 1,292 bls.

Miscellaneous Paper Stock

William Steck & Co., 65 bls.; W. Schall & Co., 138 bls.; Milton Snedeker Corp., 191 bls.; E. Butterworth & Co., 263 bls.; New England Waste Co., 28 bls.; Brown Bros. & Co., 194 bls.; Darmstadt, Scott & Courtney, 17 bls.; Anglo-South American Trust Co., 258 bls.; Chase National Bank, 172 bls.; Capitol National Bank, 44 bls.; Equitable Trust Co., 200 bls.; Bulkley, Dunton & Co., 164 bls.; Walker Goulard Plehn Co., 197 bls.; American Exchange Irving Trust Co., 179 bls.; E. J. Keller Co., 353 bls.; Order, 994 bls.

MITTS & MERRILL

Conveyor or Gravity Feed Shredder

THE operation of a beater, with its wear and tear and tremendous power consumption, has one primary purpose, namely, hydration. Anything that will economically bring about hydration more quickly relieves the beater just that much, cuts down on operating costs and speeds the process of paper making.

The Mitts & Merrill Shredder performs on magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock, in such a way as to greatly reduce their resistance to hydration when they reach the beater. It gives the beater an economical lift.

Our Shredders are built in sizes with spouts ranging from 18″ to 45″ wide. We will be glad to quote you on any size adapted to your requirements.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse.

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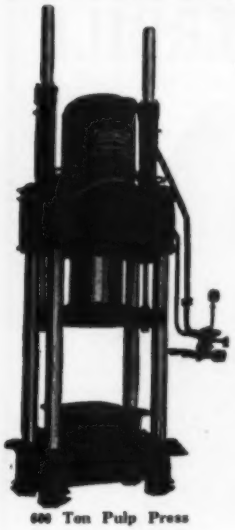

600 Ton Pulp Press

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Hydraulic Equipment for Pulp and Paper Mills, Wall Board Plants, Etc.

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BALING PRESSES
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PULP TRUCKS
HYDRAULIC PUMPS
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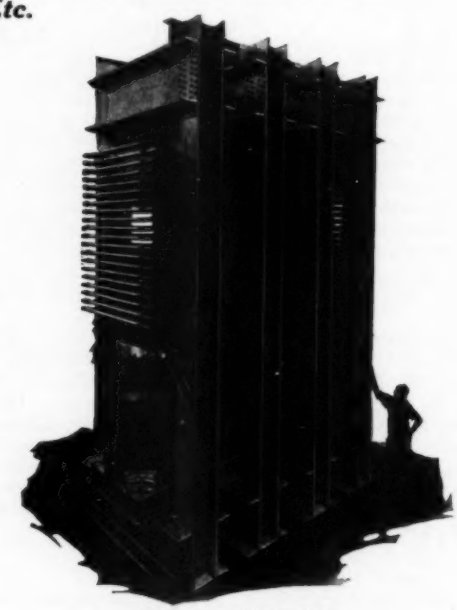
Southwark Hydraulic Equipment is the choice of the largest and best known Pulp and Paper Mills throughout the country. They find Southwark products give the most efficient service under exacting conditions. Write for Bulletin No. 14.



2000-ton 12'-6"x4'-6" 20 Opening Wall Board Press

SOUTHWARK FOUNDRY and MACHINE CO.

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CHICAGO
343 S. DEARBORN ST.

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BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUTATION

IN THE CONCENTRATION OF

SODA BLACK LIQUOR—SULPHATE BLACK LIQUOR SULPHITE WASTE LIQUOR

DUE TO

WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

ZAREMBA COMPANY
506 CROSBY BLDG. BUFFALO, N. Y.

NEW YORK OFFICE: 95 LIBERTY STREET

Paper

Imports of paper into the United States during May, 1927, showed a slight decrease in point of value as compared with the preceding month but were well above the receipts in May last year, according to official statistics issued by the Department of Commerce in Washington. During May last paper imports into this country were valued at a total of $12,575,523, contrasted with $11,317,487 in the preceding month and $10,218,981 in May, 1926. Importations of paper of all kinds in the first five months of this year reached a value of $58,507,098, against imports valued at $55,053,575 in the corresponding period a year ago.

Imports during the month of July, 1927, were fairly heavy, judging from the receipts through the port of New York. Some large shipments of printing, wrapping and board were received, and customary amounts of filter, hanging, cigarette and other grades. Imports of paper of all kinds through the port of New York in July, these data being taken from manifests of steamers arriving at that port during the month, follow:

Printing

Parsons & Whittemore, 133 rolls from Hamburg; F. Henjes, Jr., 172 reels from Hamburg; E. Dietzgen & Co., 196 cs. from Hamburg and 16 cs. from Rotterdam; Keuffel & Esser Co., 64 rolls from Hamburg; Heemsoth, Basse & Co., 25 cs. from Hamburg; B. F. Drakenfeld & Co., 172 cs. from Liverpool; P. C. Zuhlke, 284 cs. from Antwerp; Central National Bank, 205 reels from Gothenburg; Walker Goulard Plehn Co., 2 cs. from Gothenburg; Perkins- Goodwin Co., 984 reels from Bremen and 66 bls. from Hamburg; Tidewater Paper Mills Co., 5,951 rolls from Botwood, N. F.; P. Puttmann, 4 cs. from Havre; Oxford University Press, 5 cs. from Liverpool; Premier Shipping Co., 3 cs. from Rotterdam; C. Steiner, 18 cs. from Rotterdam; Martin & Bechtold, 12 cs. from Bremen; Ossian Ray, 95 reels from Gothenburg; New Haven Times Co., 117 reels from Gothenburg; M. Gottesman & Co., 158 reels from Gothenburg; Bank of Montreal, 5,582 rolls from Corner Brook; J. J. Shore & Co., 8 cs. from Bremen; Order, 186 reels from Hamburg, 162 reels Kotka, 1,662 reels Bremen and 150 rolls from Sundsvall.

Wrapping

F. C. Strype, 19 pkgs. from Antwerp; Schenkers, Inc., 79 cs. from Hamburg; Commonwealth Bank, 80 cs. from Hamburg; International Acceptance Bank, 8 bls. from Rotterdam; H. K. Schmidt, 16 rolls from Hamburg; Birn & Wachenheim, 127 cs. from Antwerp; Insight Paper Co., 240 reels from Oslo; Arkell Safety Bag Co., 254 reels and 49 bls. from Gothenburg; M. M. Cohen, 59 bls. and 36 reels from Gothenburg; Gilbert Paper Co., 221 bls. from Gothenburg; C. G. Vinans Co., 659 rolls and 25 bls. from Gothenburg; National Consumers Paper Corp., 2 cs. from Gothenburg and 5 bls. from Rotterdam; Robert Wilson Paper Corp., 174 rolls from Antwerp and 45 cs. from Glasgow; Corn Exchange Bank, 50 cs. from Antwerp; Standard Underground Cable Co., 5 cs. from Rotterdam; Borregaard Co., 1,450 reels and 169 bls. from Gothenburg; C. K. MacAlpine & Co., 61 bls. from Gothenburg; W. Hartmann & Co., 196 bls. from Hamburg; J. P. Heffernan Paper Co., 103 bls. from Gothenburg; Universal Paper Co., 522 reels and 52 bls. from Gothenburg; Crepe Kraft Co., 53 rolls from Gothenburg; National City Bank, 50 bls. from Genoa; E. Dietzgen & Co., 16 cs. from Rotterdam; Order, 1,483 bls. from Antwerp.

Cigarette

Standard Products Corp., 620 cs. from Havre; American Tobacco Co., 2,300 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 2,540 cs. from St. Nazaire and 200 cs. from Havre; DeManduit Paper Corp., 1,100 cs. from St. Nazaire; P. J. Schweitzer, Inc., 90 cs. from Marseilles; British-American Tobacco Co., 16 cs. from Havre; Surbrug Co., 20 cs. from Havre; Southern Pacific Co., 3 cs. from Havre.

Writing

H. Reeve Angel & Co., 3 cs. from London; Guibont Freres

Starch

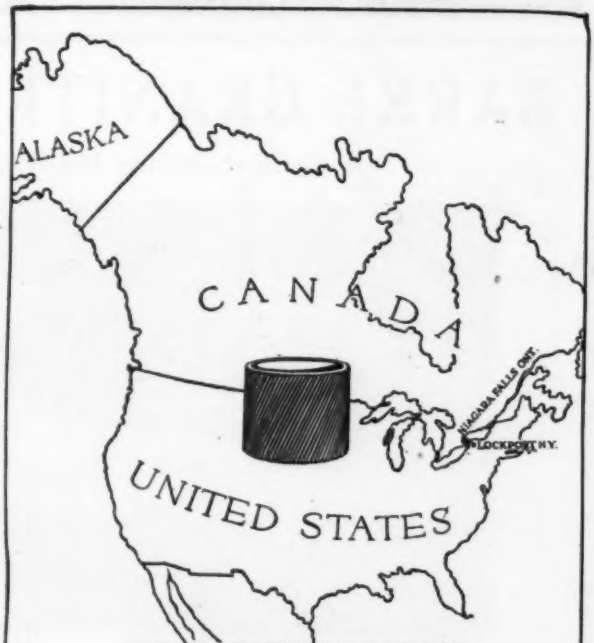
ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch



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LOCKPORT N.Y. U.S.A.
F.W. ROBERTS MFG. CO.
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NIAGARA FALLS ONT.
MANUFACTURERS OF
PAPER & PULP MILL SPECIALTIES

Something Better
In
Fourdrinier Wires

Wisconsin Wire Works

Appleton, Wisconsin

Ham Feltz sez:

Life is sure fast these days—and gittin' faster every minute. Used to be that a trip on the Main St. car line was a wild and reckless joy-ride. Now the street cars block the traffic. Same with papermaking. The speed-devil is makin' a hard life and a short one for a felt that ain't got the stuff. But I ain't heard of Hamilton A-plate press felts weakening any under the strain? Have you?

Hamilton Felts

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

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For Slitters, Creasers, Slotters.

Write for Catalog "P. I."

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BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

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& Co., 32 cs. from Southampton and 4 cs. from Havre; J. W. Hampton Jr. & Co., 43 cs. from Hamburg; Stern Bros., 8 cs. from Havre.

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G. Leuders & Co., 6 bls. from Bordeaux; C. Sleicher & Scholl Co., 13 cs. from Hamburg; H. Reeve Angel & Co., 23 cs. from London and 72 cs. from Southampton; D. C. Andrews & Co., 2 cs. from Southampton; E. Fougera & Co., 103 cs. from Southampton; J. Manheimer, 85 bls. from Southampton; Order, 20 cs. from Bordeaux.

Drawing

Keuffel & Esser Co., 85 cs. from Hamburg, 5 cs. from Southampton and 5 cs. from Rotterdam; Meadows, Wye & Co., 6 cs. from Rotterdam; H. Reeve Angel & Co., 9 cs. from London and 2 cs. from Southampton.

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Iwai & Co., 7 cs. from Kobe; A. W. Fenton, Inc., 2 cs. from Hamburg; F. B. Vandergrift & Co., 3 cs. from Liverpool.

Hanging

F. J. Emmerich & Co., 34 bls. from Hamburg, 10 bls. London, 25 bls. Liverpool and 4 cs. from Southampton; C. A. Haynes & Co., 100 cs. from London and 2 bls. from Liverpool; Panama-Pacific Co., 6 pkgs. from London; A. C. Dodman Jr. & Co., 33 bls. from Liverpool; Cunard Steamship Co., 8 cs. from Liverpool; G. J. Hunken & Co., 4 bls. from Hamburg; W. H. S. Lloyd & Co., 5 bls. from Liverpool.

Photo

Medo Photo Supply Corp., 10 cs. from London; Gevaert Co. of America, 408 cs. from Antwerp; P. C. Zuhlke, 280 cs. from Antwerp; Globe Shipping Co., 312 cs. from Bremen and 21 cs. from Rotterdam; American Express Co., 219 cs. from Antwerp.

Board

J. P. Heffernan Paper Co., 802 reels from Rotterdam; Haas Bros., 568 reels from Rotterdam; Grand Corrugated Paper Co., 164 rolls from Rotterdam; Robert Wilson Paper Corp., 314 reels from Rotterdam and 192 bls. from Antwerp; Spaulding & Tewkesbury, 192 reels from Rotterdam; National City Bank, 110 reels from Rotterdam; Perkins-Goodwin Co., 848 rolls from Rotterdam; Adrian Vuyck, 1,010 reels from Rotterdam; State Bank, 189 reels from Rotterdam; C. W. Brown Paper Corp., 17 bls. from Hamburg; Flough Co., 70 cs. from Hamburg; Brooks Paper Co., 5 cs. from Liverpool; Thurnauer & Co., 20 cs. from Antwerp; C. K. MacAlpine & Co., 70 bls. from Gothenburg; Coty, Inc., 86 cs. from Havre; American Express Co., 61 cs. from Bremen; Acme Novelty Co., 4 cs. from Antwerp; H. H. Ayer, Inc., 4 cs. from Havre; Brooks Paper Co., 5 cs. from Rotterdam; International Forward Co., 25 bls. from Gothenburg; O. M. Baxter, Inc., 30 cs. from Gothenburg; Fibre Case & Novelty Co., 16 bls. from Gothenburg; Order, 10 bls. from Hamburg.

Miscellaneous

D. C. Andrews & Co., 275 cs. from Hamburg and 4 cs. from Southampton; Baldwin Universal Co., 11 cs. from Hamburg; Milton Snedeker Corp., 20 cs. from Hamburg; Brown Bros. & Co., 18 cs. from Hamburg; Freedman & Slater, 43 cs. from Hamburg; A. Goodman & Co., 8 cs. from Hamburg; P. H. Petry & Co., 20 cs. from Rotterdam and 5 cs. from Havre; Japan Paper Co., 16 cs. from Rotterdam, 15 cs. Bordeaux, 81 cs. Genoa, 47 cs. Havre and 2 cs. from Barcelona; S. Gilbert, 50 cs. from Rotterdam; American Surface Abrasive Export Corp., 290 pkgs. from Rotterdam; Quality Art Novelty Co., 56 cs. from Hamburg and 24 cs. from Havre; International Forwarding Co., 18 cs. from Hamburg and 35 cs. from Rotterdam.

Market Quotations

(*Continued from page 869*)

Penobscot Paper Fibre Co. 6s, 1942	99	
Poland Paper 7s, 1930	99	
Port Alfred Pulp & Paper Co. 6½s, 1943	101¼	102¼
Powell River Paper Co. 5s	99	

TO REMOVE LOCKING BLOCKS USE DRIFT HERE
POSITION OF LOCKING BLOCK BEFORE BAR IS LOCKED IN PLACE
SHOWING LOCKING BLOCK IN FINAL POSITION
NOTE HEAVY LUG SECTIONS BETWEEN BARS

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High Speed Beaters

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Heavier Furnishes
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We Rest Our Case on Performance

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The Dayton Beater & Hoist Co.

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Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

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See page 362 in the 1927 Paper and Pulp Mill Catalogue

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In hard continuous duty on transmission drives under variable loads, Quaker Rubber Belts deliver maximum power with freedom from slip or stretch.

They give thorough satisfaction under most trying conditions of heat or moisture in paper mill operation.

Quaker belts are "made to order" for your plant.

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Which absolutely control the drying of the sheet. Installed on sixty days' trial

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Lime Sludge Analysis
Wagner Stationary Recovery Furnace
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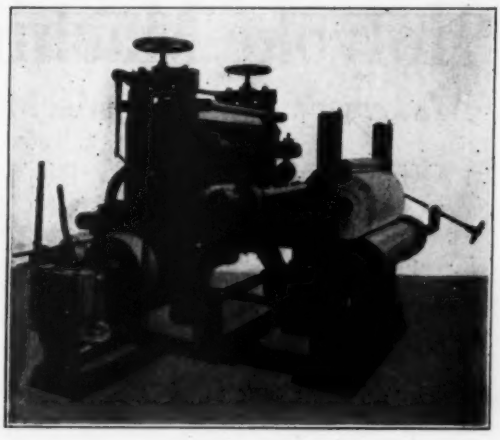
Port Alfred Pulp & Paper Co. 6s, 1943		99½
Price Bros. Co. 6s, 1943	103	
Provincial Paper Co. 6s, 1941	101½	
Queen City Paper Co. 7s, 1933	97½	100
Richardson Co. 6s, 1938	100	
Riordan Pulp & Paper Co. 6s, 1931	100½	102½
River Raisin Paper Co. 6s, 1936	98	99
Rolland Paper Co. 6s, 1937	99	
St. Anne Paper Co. 6½s, 1946	98	99½
St. Croix Paper Co. 5s, Serial	99	
St. Regis Paper Co. 6s, 1931	99½	100½
Spanish River Paper Co. 8s, 1941	108	110
Spanish River Pulp & Paper Co. 6s, 1931	108	110
Stevens & Thomson Paper Co. 6s, 1942	93	95
Saugoit Paper Co. 6½s, 1938	99	
St. Lawrence Paper Mills Co. 6s, 1946	97½	99½
Tomahawk Kraft Paper Co. 7s, 1928-33	95	98
Taggart Bros. Co. 6s, 1944	95	98
Tait Paper & Color Industries 6s, 1934	88	93
Ticonderoga Pulp & Paper Co. 5s. 1930	94	
Ticonderoga Pulp & Paper Co. 6s, 1940	99	
Warren, S. D., Co. 6s, 1945	101	102
Watab Paper Co. 6½s, 1942	102	103
Wayagamack Paper & Pulp Co. 6s, 1951	98	99
Western Quebec Paper Co. 6½s, 1948		80
Whitaker Paper Co. 7s, 1942	106½	107½
Whitmer-Parsons Pulp & Lbr. 8s, Units	50	60
Woods Mfg. Co. 6s, 1943	96½	98

STOCKS	BID	ASKED
Advance Bag & Paper Co. Pfd.	98	
Abitibi Power & Paper Co. Com.	99	101
Abitibi Power & Paper Co. Pfd.	o. w.	b. w.
American Book Co.	142	145
American Sales Book Co. Com.	60	62
American Sales Book Co. Pfd.	100	103
American Tissue Mills Pfd.	90	92
American Writing Paper Ctf.	16	16¼
American Writing Paper Co. Old Pfd.	1	
Atlantic Pulpwood & Paper Co.		b. w.
A. P. W. Paper Com.	22	22½
A. P. W. Paper Pfd.	97	97½
Androscoggin Pulp Co. Com.	30	
Androscoggin Pulp Co. Pfd.	90	
Bayless Pulp & Paper Co. Pfd.	15	20
Burt Co. Com.	59	62
Belgo Canadian Paper Co. Pfd.	102	104
Brompton Pulp & Paper Co. Com.	34	36
Beaver Board Co. Pfd.	38	40
British Columbia Pulp & Paper Co. Pfd.	65	70
Brompton Pulp & Paper Co. 8% Pfd.	94	98
Brown Corp. Pfd.	103	
Celotex Co. Com.	83	
Celotex Co. Pfd.	88	90
Champion Fibre Co. 7% Pfd.	100	103
Crown Willamette Paper Co. 1st Pfd.	85¾	87⅝
Creamery Package Mfg. Co. Full Voting Com.	29¼	30¾
Creamery Package Mfg. Co. Non Voting Com.	28¾	29¼
Chemical Paper Mfg. Co. 1st Pfd.	90	
Chemical Paper Mfg. Co. 2nd Pfd.	60	
Chillicothe Paper Co. Pfd.	100	
Creamery Package Mfg. Co. Pfd.	99½	101½
Diem & Wing Co. Pfd.	88	
Donnacona Paper Co. Com.	65	
Donnacona Paper Co. Pfd.	98½	
Eastern Mfg. Co. Pfd.	25	28
Escanaba Paper Co. Pfd.	40	
Fraser Co. Cumu. Pfd.	o. w.	b. w.
Fibreloid Co. Pfd.	93	97
Gair (Robt.) Co. Pfd.	90	95
Great Northern Paper	62	64
Hammermill Paper Co. Pfd.	106	110
Hinde & Dauch Co. Com.	137	
Hinde & Dauch Pfd.	101	
Holyoke Card & Paper Co.	170	
International Pulp Co. Pfd.	60	65
International Paper Co. 6% Pfd.	85	
International Textbook Co.	25	27
International Paper Co. Com.	49½	50
Jessup & Moore Paper Co. 1st Pfd.		70
Jessup & Moore Paper Co. Com.		20
Louis De Jonge Pfd.	95	97
Marathon Paper Mills Com.	126	
Midwest Box Co. 8% Pfd.	80	85
Minnesota & Ontario Paper Co. 6% Pfd.	75	80
Munising Paper Co. Pfd.	80	90
Mengel Co.	27	30
Munising Paper Co. Com.	20	30
Missisqoui Pulp & Paper Co. Pfd.	95	100
National Paper & Type Co. Pfd.	35	40
Oxford Paper Co. Pfd.	106	
Oxford Paper Co. Com.	160	170
Penobscot Chemical Fibre Co. Com.	70	75
Price Bros.	53	
Package Paper Supply Co. Units	22	
Quebec Pulp & Paper Co. Units	30	35
Richardson Co. Pfd.	105	
Rubberoid Co.	85½	88
River Raisin Paper Co.	7½	8½
Robertson Paper Co. Pfd.	6	
Spanish River Pulp & Paper Mills Com.	102	104
Spanish River Pulp & Paper Mills Pfd.	114	119
Scott Paper Co. Pfd.	99	100½
Sefton Mfg. Co.	98	102
St. Croix Paper Co. Com.	160	
St. Regis Paper Co. Pfd.	101	103
St. Regis Paper Co. Com.	49	51
United Paperboard Co. Com.	16	18
Union Bag & Paper Co.	50½	50½
Wayagamack Paper Co.	61	63
Watervliet Paper Co.	10	
Watson (H. F.) Paper Co.	125	
Westfield River Paper Co. Pfd.	o. w.	b. w.
West Virginia Pulp & Paper Co. Com.	51	53
Whitaker Paper Co. Pfd.	99¾	100¾
Whitaker Paper Co. Com.	57	58

Quotations as of July 23, 1927.



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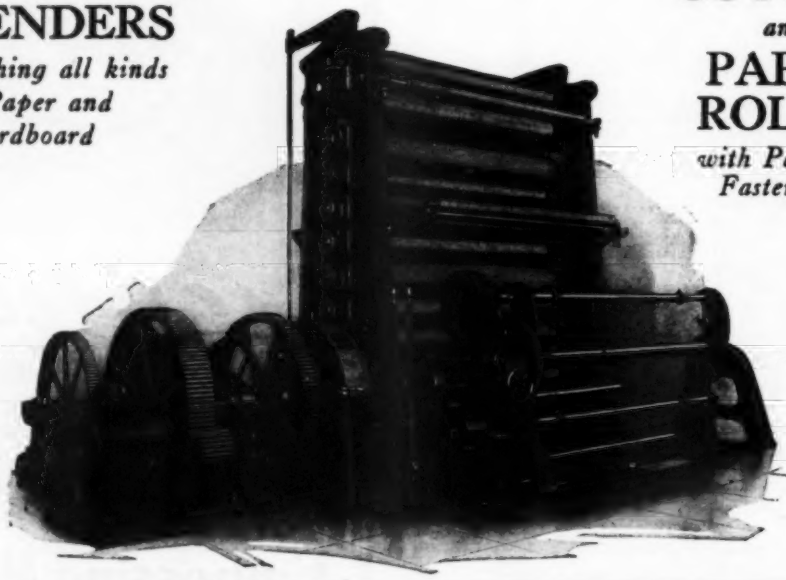

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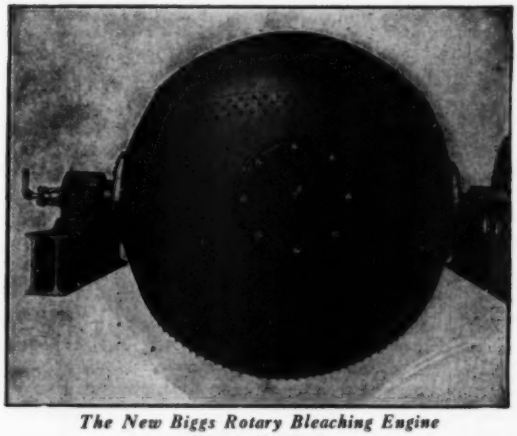

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